

## Research Article

# Accelerating Critical Thinking to Industrial Pace and Scale Through AI: Addressing the Global Issue of Food Sustainability

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Received: April 12, 2024; Accepted: April 20, 2024; Published: May 08, 2024

## Abstract

We present a new, systematized way to teach critical thinking, using AI (artificial intelligence) incorporated into a research tool created for a newly emerging science, Mind Genomics, that is concerned with how people respond to ideas concerning everyday experiences. Mind Genomics methodology requires the researcher to develop four questions which 'tell a story,' and for each question to provide four alternative answers. Previous studies showed that many users experienced difficulty creating the questions. To overcome this problem, Mind Genomics incorporates AI through the mechanism of the Idea Coach. This mechanism allows the researcher to describe the problem being addressed, and then generates 15 questions the researcher evaluates and chooses for returns with 15 questions during the course of setting up the study's story. Idea Coach provides additional analyses on the questions returned to reveal deeper structure and stimulate critical thinking by the researcher. We demonstrate the capabilities of the process by comparing the results for 'food sustainability' for people who are defined to be poverty stricken, first in the United States, and then in Ghana, and finally in Egypt. The effort requires approximately 10 minutes in total and is scalable for purposes of education and practical use..

## Introduction: The Importance of Critical Thinking to Solve Problems

In order to address issues facing humanity, such as sustainability, it is important to be able to think clearly about the nature of the problem, and from there proceed to solutions. The importance of critical thinking cannot be underestimated, most apparently in education [1,2], but also in other areas, such as dentistry [3], not to mention the very obvious importance of critical thinking in areas where there are opposing parties confronting each other with the weapons of knowledge and thinking, such as the law [4]. The very idea of dealing with the United Nations' (UN) 24 defined Global Issues (United Nations, undated) calls into play the need to understand and then deal with the problem. Critical thinking, or its absence has been recognized as a key feature in the solution of these problems. From the UN's perspective, their 24 issues need to be addressed continually over time, strongly suggesting that the need for critical thinking is not limited *in* time but needs to be engaged with *through* time.

In today's world, critical thinking is recognized as important for society [5]. The key question is not the recognition of critical thinking, but rather how to encourage it in a way which itself is sustainable, in a way which is cost-effective, scalable, and productive in terms of what it generates. To the degree that one can accelerate critical thinking, and even more so to focus critical thinking on a problem, one will

most likely be successful. Finally, if such critical thinking can be aided by technical aids, viz., TACT (Technical Aids to Creative Thought), there is a greater chance of success. The notion of the aforementioned approach TACT was first introduced to the senior author HRM by the late professor Anthony Oettinger of Harvard University in 1965, almost 60 years ago. This paper shows how today's AI can become a significant contributor to TACT, and especially to critical thinking about UN based problems, this one being food sustainability [6].

The topic of food sustainability is just one of many different topics of the United Nations, but one seeing insufficient progress (UN undated). From the point of view of behavioral science, how does one communicate issues regarding food sustainability? And how does one move beyond the general topic to specific topics? It may well be that with years of experience in a topic the questions become easier, but what about the issue of individuals wanting to explore the topic but individuals without deep professional experience? Is it possible to create a system using AI which can teach in a manner best called Socratic, i.e., a system which teaches by laying out different questions that a person could ask about a topic?

## The Contribution of Mind Genomics to Critical Thinking about a Problem

During the past 30 years, researchers have begun to explore the way people think about the world of the everyday. The approach has

been embodied in an emerging science called Mind Genomics (REF). The foundation of Mind Genomics is the belief that we are best able to understand how people think about a topic by presenting them with combinations of ideas, and instructing these people to rate the combination of ideas on a particular rating scale, such scales as relevance to them, interest to them, perceived solvability, etc. The use of combinations of ideas is what is new, these combinations created in systematic manner by an underlying structure called an experimental design. The respondent who participates does not have to consciously think about what is important, but rather do something that is done every day, namely choose or better 'rate' the combinations on a scale. The analysis of the relation between what is presented and what is rated, usually through statistics (e.g., regression) ends up showing what is important.

The process has been used extensively to uncover the way people think about social problems [7], legal issues [8], etc.. The process is simple, quick and easy to do, prevents guessing, and ends up coming up with answers to problems.

The important thing here is that the researcher has to ask questions, provide answers, and then the computer program matches the answers together into small groups, vignettes, presents these to the respondent, who has to rate he group or the combination.

Of interest here is the front end of the process, namely, how to ask the right question. It is asking questions which has proved to be the stumbling block for Mind Genomics, since its founding in 1993 (REF). Again, and again researchers have request help to formulate the studies. It is no exaggeration to state that the creation of questions which tell a story has become one of the stumbling blocks to the adoption of Mind Genomics.

Early efforts to ameliorate the problem involved work sessions, where a group of experts would discuss the problem. Although one might surmise that a group of experts in a room certainly could come up with questions, the opposite was true. What emerged was irritation, frustration, and the observation that the experts attending either

could not agree on a question, or in fact could even suggest one. More than a handful of opportunities to do a Mind Genomics project simply evaporated at this point, with a great deal of disappointment and anger covering what might have been professional embarrassment. All would not be lot, however, as many of the researchers who had had experienced continued to soldier on, finding the process relatively straightforward. Those who continued refused to let the perfect get in the way of the good. This experience parallels what has been previously reported, namely that people can ask good questions, but they need a 'boost' early on [9].

### The Contribution of AI in 2023

The announcement of AI by Open AI in the early months of 2023 proved to provide the technology which would cut the Gordian knot of frustration. Rather than having people have to 'think' through the answer to the problem with all of the issues which would ensue, it appeared to be quite easy to write a query about a topic and have the Mind Genomics process come up with questions to address that query. It was, indeed, far more enjoyable to change the ingoing query, and watch the questions come pouring out. It would be this process, a 'box for queries' followed by a standardized report, which would make the development fun to do.

Figure 1 shows what confronted the researcher before the advent of AI, namely an introduction page which required the researcher to name the study, followed immediately by a dauntingly empty page, requesting the research to provide our questions which tell a story. The researcher has the option to invoke AI for help by pressing the Idea Coach button.

### Results Emerging Immediately and After AI Summarization

The next set of tables shows the questions submitted through the query to Idea Coach, the immediate set of 15 questions returned within 5-15 seconds. Later on, we will see the results after AI summarization has been invoked on the different set of questions.

Figure 1: Panel A shows the first screen, requiring the respondent to name the study. Panel B shows the second screen, presenting the four questions to be provided by the respondent.

In the typical use of Mind Genomics, the researcher often ends up submitting the squib to Idea Coach from a minimum of one time, but more typically 3-5 times, occasionally modifying the squib, but often simply piling up different questions. These different questions, 15 per page, provide a valuable resource of understanding the topic through the question. Typically, about 2/3 of the questions are different from those obtained just before, but over repeated efforts many of the questions will repeat.

Table 1 shows the first set of 15 questions for each of three countries, as submitted to Idea Coach. Note that the squib presented to Idea Coach is only slightly different for each country, that difference being only the name of the country. The result, however, ends up being 15 quite different questions for each country, questions which appear to be appropriate for the country. It is important to emphasize here that the 'task' of AI is to ask questions, not to provide factual information. Thus, the issue of factual information is not relevant here. The goal is to drive thinking.

It is important to note that Table 1 can be replicated as many times as the researcher wishes. The questions end up allowing the researcher to look at different aspects of the problem. The results come out immediately to the researcher, as well as being stored in a file for subsequent AI 'summarization' described below. At the practical level, one can imagine a student interested in a topic looking at the questions for a topic again and again, as the student changes some of the text of the query (viz, the squib shown in Figure 2, Panel B). It is worth emphasizing that the Idea Coach works in real time, so that each set of 15 questions can be re-run and presented in the span of 5-15 seconds when the AI system is 'up and running.' Thus, the reality ends up being a self-educating system, at least one which provides the 'picture of the topic' through a set of related questions, 15 questions at a time. The actual benefit of this self-pacing learning by reading questioning is yet to be quantified in empirical measures, however (Figure 3).

It is relevant to note that AI-generated questions are beginning to be recognized as an aid to critical thinking, so that the Idea Coach strategy can be considered as part of the forefront of what might be the 21<sup>st</sup> century TACT program, Technical Aid to Creative thought (Oettinger, 1965, personal communication). Papers such as the new thesis by Danry [10] of MIT reflect this new thinking. Half-way around the world the same approaches are being pioneering in the Muslim world [11].

Once the questions are presented, it is left to the researcher to move on to completing the set-up of the Mind Genomics study, or to further request additional sets of 15 questions. When the creation

**Select 4 questions from the following to use in the study creation process or use them as a guide to create your own.**

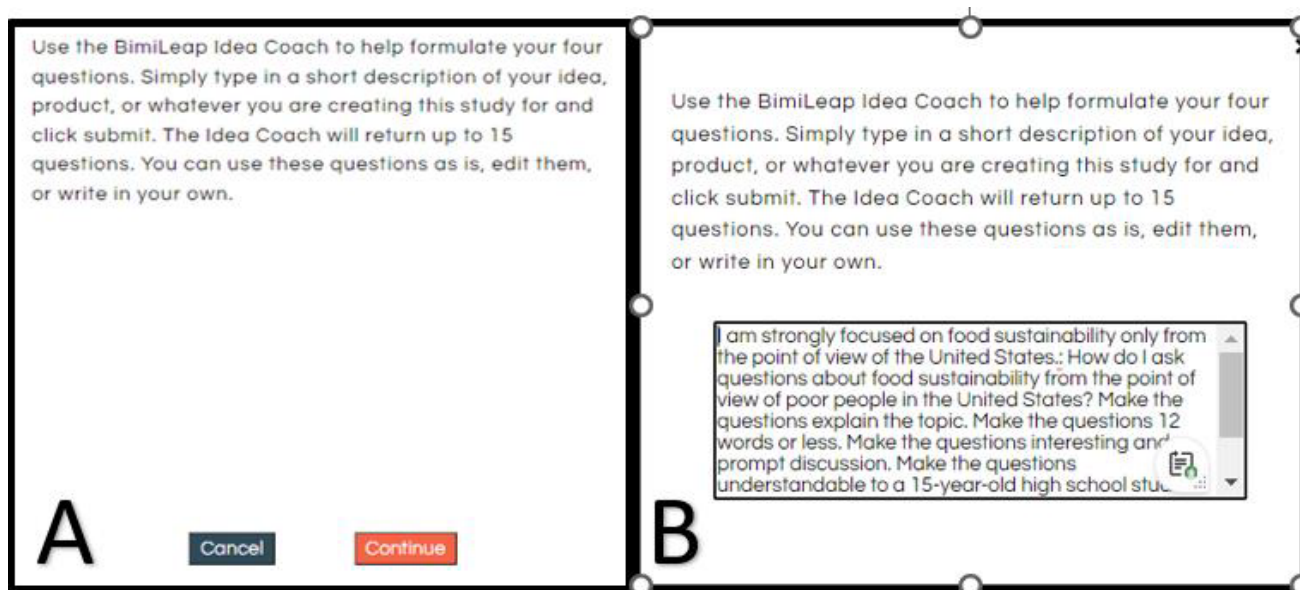
- 1. How can we ensure nutritious food for all low-income Americans?
- 2. What barriers do impoverished individuals face in accessing sustainable food options?
- 3. How can the United States promote urban farming for food sustainability in impoverished communities?
- 4. What government policies can help alleviate food deserts in low-income areas?
- 5. How can schools ensure healthy and sustainable meals for underprivileged students?
- 6. What innovative methods can be used to reduce food

Copy into study

Rerun for another 15 questions

Edit your original description and rerun

**Figure 3:** The first six questions out of the 15 returned by Idea Coach to answer the request shown in Figure 2, Panel B. The remaining nine questions are accessed by scrolling through the screen.



**Figure 2:** Panel A shows the information about Idea Coach. Panel B shows the 'box' where the researcher creates the query for Idea Coach, in terms of 'shaping' the structure and information of the question.

**Table 1:** Query & Questions for United States, Ghana and Egypt. These 15 questions emerged 10-15 seconds after the query was submitted to Idea Coach.

Query & Questions – United States

I am strongly focused on food sustainability only from the point of view of the United States.: How do I ask questions about food sustainability from the point of view of poor people in the United States? Make the questions explain the topic. Make the questions 12 words or less. Make the questions interesting and prompt discussion. Make the questions understandable to a 15-year-old high school student. Make the questions appropriate for dealing with food sustainability for poor people in the United States. That is, focus only on the United States

- How does limited access to fresh produce impact low-income communities?
- In what ways does food insecurity affect children's overall health and development?
- What role does food waste play in exacerbating hunger among impoverished Americans?
- How can urban farming initiatives offer sustainable food solutions for low-income neighborhoods?
- What challenges do rural communities face in terms of accessing nutritious and affordable food?
- What impact does the lack of affordable grocery stores have on food sustainability for low-income individuals?
- How does climate change impact the availability and affordability of food for impoverished Americans?
- How can community gardens empower low-income individuals to improve their food security?
- What initiatives or policies could help reduce food deserts in impoverished areas?
- How does the reliance on processed foods contribute to the food sustainability issue for poor Americans?
- What are the benefits of incorporating locally sourced foods into the diets of low-income individuals?
- How does the fast-food industry affect the food choices and sustainable practices of low-income families?
- Can technology play a role in improving food sustainability for impoverished Americans?
- How do education and awareness campaigns influence the food choices of low-income individuals?
- What strategies could be implemented to ensure that all Americans have access to nutritious and sustainable food options, regardless of income?

Query & Questions - Ghana

I am strongly focused on food sustainability only from the point of view of Ghana. How do I ask questions about food sustainability from the point of view of poor people in Ghana? Make the questions explain the topic. Make the questions 12 words or less. Make the questions interesting and prompt discussion. Make the questions understandable to a 15-year-old high school student. Make the questions appropriate for dealing with food sustainability for poor people in Ghana. That is, focus only on Ghana

- How does poverty affect access to nutritious food in Ghana?
- What challenges do poor communities in Ghana face in cultivating sustainable food sources?
- Can sustainable farming techniques help alleviate hunger in impoverished areas of Ghana?
- What role can the government play in promoting food sustainability for the poor in Ghana?
- How does climate change impact food production and availability for impoverished Ghanaians?
- What innovative solutions can address food waste and hunger in Ghana's impoverished areas?
- How can community gardens empower poor Ghanaians, ensuring sustainable food sources?
- What are the barriers preventing poor Ghanaians from adopting sustainable farming methods?
- Are there sustainable alternatives to expensive imported foods for impoverished Ghanaians?
- How does the lack of infrastructure affect access to sustainable food options for Ghanaians in poverty?
- Can traditional agricultural practices be adapted to address food sustainability in Ghana?
- How can education and awareness programs promote sustainable food practices within poor communities in Ghana?
- Are there any successful initiatives promoting food sustainability among the poor in Ghana?
- How can collaborations between Ghanaian NGOs and international organizations improve food sustainability for the poor?
- What role can individuals play in supporting sustainable food production in Ghana's impoverished areas?

Query & Questions - Egypt

I am strongly focused on food sustainability only from the point of view of Egypt. How do I ask questions about food sustainability from the point of view of poor people in Egypt? Make the questions explain the topic. Make the questions 12 words or less. Make the questions interesting and prompt discussion. Make the questions understandable to a 15-year-old high school student. Make the questions appropriate for dealing with food sustainability for poor people in Egypt. That is, focus only on Egypt

- How does food waste affect poor communities in Egypt?
- What strategies can help poor families in Egypt access nutritious food?
- Are traditional farming methods in Egypt sustainable for the environment?
- How does climate change impact food availability for impoverished Egyptians?
- Is urban agriculture a viable solution for addressing hunger in Egypt?
- What role does government policy play in ensuring food security for the poor in Egypt?
- Can community gardens empower impoverished Egyptians to become self-sufficient?
- How can Egypt reduce its dependency on imported food and achieve food sustainability?
- Do cultural preferences limit the range of sustainable food options in Egypt?
- What obstacles do impoverished Egyptians face in adopting sustainable farming practices?
- Can technology advancements improve access to nutritious food for the poor in Egypt?
- How can education about food sustainability benefit impoverished communities in Egypt?
- Are there specific crops or livestock that could improve food sustainability in Egypt?
- Is food affordability a bigger concern than food availability for the poor in Egypt?
- What impact does the tourism industry have on food sustainability for Egypt's poor?

of questions is complete, the researcher is instructed to provide four answer for each question. A separate paper will deal with the nature of 'answers' to the questions. This paper deals only with the additional analysis of the questions generated by Idea Coach.

### AI Summarization and Extensions of Sets of 15 Questions

The second part of Idea Coach occurs after the researcher has completed the selection of the four questions, as well as completing the generation or selection of the four answers for each question. This paper does not deal with the creation of answers, but the process is quite similar to the creation of questions. The researcher creates the set of four questions, perhaps even editing/polishing the questions to ensure proper understanding, and tone. Once the questions are published, the Idea Coach generates four answer to each question. The entire process of summarization, for all of the set of 15 questions, takes about 15-30 minutes. The Excel file containing the 'Answer Book' with all summarizations is generally available 20 minutes after the questions and answers have been selected. The Answer book is available for download at the website ([www.BimiLeap.com](http://www.BimiLeap.com)) and is emailed to the researcher as well.

We now go into each part of the summarization. The actual summarization for each set of 15 questions is presented on one tab of the Idea Book. We have broken up the summarizations into each major section, and then present the summarization by AI for the USA, followed by for Ghana, and finally for Egypt. In this way the reader can see how the initial squib, the prompt to Idea Coach, differing only in the country, ends up with radically different ideas.

### Key Ideas

The output from the first prompt had produced full questions. The 'Key Ideas' prompt strips the question format away, to show the idea or issue underlying the question. In this way, the 'Key Ideas prompt can be considered simply as a change in format, with no new ideas emerging. Table 2 shows these ideas. It is not clear which is better to use. To the authors, it seems to be more engaging to present the ideas in the form of a question. When presenting the same material as ideas seems to be more sterile, less engaging, and without grounding.

The use both of questions and of the ideas on which these questions are based have been addressed as part of an overall study of the best ways to learn. In the authors' own words '*Likewise, being constructive is better than being active because being constructive means that a learner is creating new inferences and new connections that go beyond the information that is presented, whereas being active means only that old knowledge is retrieved and activated.*' [12]

Before moving on to the next section, one may rightfully ask whether a student really learns by being given questions which emerge from a topic, or whether it is simply better to let the student flounder around, come up with questions, and hopefully discover other questions, either by accident, or by listening to the other students answer the same question and gleaning from those other answers new points of view [13]. The point of view taken here is that these aids to creative thought do not provide answers to questions, but rather open up the vistas, so that the questioner, research or student, can

think is new but related directions. The output are additional, newly focused questions, rather than answers which put the question to rest. Quite the opposite [14]. The question opens up to reveal many more dimensions perhaps unknown to the researcher of the student when the project was first begun. In other words, perhaps the newly surfaced questions provide more of an education than one might have imagined.

### Themes

With themes Idea Coach moves toward deconstructing the ideas, to identify underlying commonalities of issues, and the specific language in the questions supporting those commonalities. With 'Themes' the AI begins the effort to teach in a holistic manner, moving away simply from questions to themes which weave through the questions. For the current version of Idea Coach, the effort to uncover themes is done separately for each set of 15 questions, in order to make the task manageable. In that way the researcher or the student can quickly compare the themes generated from questions invoking the United States versus questions invoking Ghana, or questions invoking Egypt. Table 3 gives a sense of how the pattern of themes differ [15]. It is also important that the organization shown in Table 3, is the one provided by the Idea Coach AI, and not suggested by the researcher. Note that for Egypt, as contrasted with the USA and Ghana, Idea Coach refrained from grouping ideas into themes, but treated each idea as its own theme.

### Perspectives, an Elaboration of Themes

Perspectives advances the section of themes, which had appeared in Table 4. Perspectives takes the themes, and puts judgment around these themes, in terms of positive aspects, negative aspects, and interesting aspects. Perspectives are thus elaborations of themes. In other words, perspectives ends up being an elaboration of themes, useful as a way to cement the themes into one's understanding.

### What is Missing

As the analysis moves away from the clarification of the topic, it moves towards more creative thought. The first step is to find out what is missing, or as stated by Idea Coach, '*Some missing aspects that can complete the understanding of the topic include:*' It is at this point that AI moves from simple providing ideas to combining ideas, and suggesting ideas which may be missing.

It is at this stage, and as the stage of 'innovation' that AI reaches a new level. Rather than summarizing what has been asked, AI now searches for possible 'holes' and a path towards greater completeness in thinking. Perhaps it is at this level of suggesting missing ideas that the user begins to move into a more creative mode, although with AI suggesting what is missing one cannot be clear whether it is the person who is also thinking in these new directions, or whether the person is simply moving with the AI, taking in the information, and enhancing their thinking (Table 5).

### Alternative Viewpoints

Alternative viewpoints involve arguing for the opposite of the question. We are not accustomed to thinking about counterarguments

**Table 2:** Key Ideas underlying the 15 questions.

<p><b>Key Ideas USA</b></p> <ol style="list-style-type: none"> <li>1. Limited access to fresh produce in low-income communities and its impact on residents' overall health and well-being.</li> <li>2. The effects of food insecurity on the health and development of children.</li> <li>3. The role of food waste in exacerbating hunger among impoverished Americans.</li> <li>4. How urban farming initiatives can provide sustainable food solutions in low-income neighborhoods.</li> <li>5. The challenges faced by rural communities in accessing nutritious and affordable food.</li> <li>6. The impact of a lack of affordable grocery stores on food sustainability for low-income individuals.</li> <li>7. The effects of climate change on the availability and affordability of food for impoverished Americans.</li> <li>8. The empowerment provided by community gardens in improving food security for low-income individuals.</li> <li>9. Initiatives and policies aimed at reducing food deserts in impoverished areas.</li> <li>10. The contribution of the reliance on processed foods to the food sustainability issue for poor Americans.</li> <li>11. The benefits of incorporating locally sourced foods into the diets of low-income individuals.</li> <li>12. The influence of the fast-food industry on the food choices and sustainable practices of low-income families.</li> <li>13. The potential role of technology in improving food sustainability for impoverished Americans.</li> <li>14. The impact of education and awareness campaigns on the food choices of low-income individuals.</li> <li>15. Strategies to ensure that all Americans have access to nutritious and sustainable food options, regardless of income.</li> </ol> <p><b>Key Ideas - Ghana</b></p> <ol style="list-style-type: none"> <li>1. The impact of poverty on access to nutritious food in Ghana.</li> <li>2. Challenges faced by poor communities in cultivating sustainable food sources.</li> <li>3. The potential of sustainable farming techniques in alleviating hunger in impoverished areas of Ghana.</li> <li>4. The government's role in promoting food sustainability for the poor in Ghana.</li> <li>5. The impact of climate change on food production and availability for impoverished Ghanaians.</li> <li>6. Innovative solutions to address food waste and hunger in Ghana's impoverished areas.</li> <li>7. The empowerment of poor Ghanaians through community gardens for sustainable food sources.</li> <li>8. Barriers preventing poor Ghanaians from adopting sustainable farming methods.</li> <li>9. Sustainable alternatives to expensive imported foods for impoverished Ghanaians.</li> <li>10. The lack of infrastructure and its effect on access to sustainable food options for Ghanaians in poverty.</li> <li>11. Adaptation of traditional agricultural practices to enhance food sustainability in Ghana.</li> <li>12. The role of education and awareness programs in promoting sustainable food practices among poor communities in Ghana.</li> <li>13. Successful initiatives promoting food sustainability among the poor in Ghana.</li> <li>14. Collaboration between Ghanaian NGOs and international organizations for improved food sustainability.</li> <li>15. The individual's role in supporting sustainable food production in Ghana's impoverished areas.</li> </ol> <p><b>Key Ideas - Egypt</b></p> <ol style="list-style-type: none"> <li>1. The impact of food waste on poor communities in Egypt.</li> <li>2. Strategies to help poor families access nutritious food in Egypt.</li> <li>3. The sustainability of traditional farming methods in Egypt.</li> <li>4. The impact of climate change on food availability for impoverished Egyptians.</li> <li>5. The viability of urban agriculture as a solution for hunger in Egypt.</li> <li>6. The role of government policy in ensuring food security for the poor in Egypt.</li> <li>7. The empowerment of impoverished Egyptians through community gardens.</li> <li>8. Reducing Egypt's dependency on imported food and achieving food sustainability.</li> <li>9. Cultural preferences and their impact on sustainable food options in Egypt.</li> <li>10. Obstacles faced by impoverished Egyptians in adopting sustainable farming practices.</li> <li>11. Technology advancements for improving access to nutritious food for the poor in Egypt.</li> <li>12. The benefits of education about food sustainability for impoverished communities in Egypt.</li> <li>13. Crops or livestock that could improve food sustainability in Egypt.</li> <li>14. The priority between food affordability and availability for the poor in Egypt.</li> <li>15. The impact of the tourism industry on food sustainability for Egypt's poor.</li> </ol>
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in the world of the everyday. Of course, we recognize counterarguments such as what occurs when people disagree. Usually, however, the disagreement is about something that people think to be very important, such as the origin of climate change or the nature of what climate change is likely to do. In such cases we routinely accept alternative viewpoints.

The Idea Coach takes alternative viewpoints and counterarguments to a deeper stage, doing so for the various issues which emerge from the questions. The embedded AI takes an issue apart and looks for the counterargument. The counterargument is not put forward as fact,

but simply as a possible point of view that can be subject to empirical investigation for proof or disproof (Tables 6-9).

## Discussion and Conclusions

The goal of the paper has been to show what is currently available to students and researchers alike. The objective of the demonstration has been to take a simple problem, one that might be part of everyday discourse, and use that problem to create a 'book of knowledge' from the topic, using questions and AI elaboration of the questions.

We hear again and again about the importance of critical thinking,

**Table 3:** Themes emerging from the collection of 15 questions for each country.

<p><b>Themes - USA</b></p> <ol style="list-style-type: none"> <li>1. Access to Fresh Produce and Food Insecurity: <ul style="list-style-type: none"> <li>- Limited access to fresh produce in low-income communities</li> <li>- Effects of food insecurity on health and development of children</li> <li>- Role of food waste in exacerbating hunger among impoverished Americans</li> <li>- Challenges faced by rural communities in accessing nutritious and affordable food</li> </ul> </li> <li>2. Food Sustainability and Community Initiatives: <ul style="list-style-type: none"> <li>- Urban farming initiatives in low-income neighborhoods</li> <li>- Lack of affordable grocery stores and its impact on food sustainability for low-income individuals</li> <li>- Empowerment provided by community gardens in improving food security for low-income individuals</li> <li>- Initiatives and policies aimed at reducing food deserts in impoverished areas</li> </ul> </li> <li>3. External Factors and Food Sustainability: <ul style="list-style-type: none"> <li>- Effects of climate change on availability and affordability of food for impoverished Americans</li> <li>- Influence of fast-food industry on food choices and sustainable practices of low-income families</li> <li>- Potential role of technology in improving food sustainability for impoverished Americans</li> </ul> </li> <li>4. Education and Awareness: <ul style="list-style-type: none"> <li>- Impact of education and awareness campaigns on food choices of low-income individuals</li> </ul> </li> <li>5. Ensuring Access to Nutritious and Sustainable Food: <ul style="list-style-type: none"> <li>- Contribution of reliance on processed foods to food sustainability issue for poor Americans</li> <li>- Benefits of incorporating locally sourced foods into diets of low-income individuals</li> <li>- Strategies to ensure all Americans have access to nutritious and sustainable food options, regardless of income.</li> </ul> </li> </ol> <p><b>Theme: Ghana</b></p> <ol style="list-style-type: none"> <li>1: Access to Nutritious Food and Poverty in Ghana <ul style="list-style-type: none"> <li>- The impact of poverty on access to nutritious food in Ghana.</li> <li>- The lack of sustainable food sources in poor communities.</li> <li>- Barriers preventing poor Ghanaians from adopting sustainable farming methods.</li> <li>- The lack of infrastructure and its effect on access to sustainable food options for Ghanaians in poverty.</li> </ul> </li> <li>2: Sustainable Farming Techniques and Alleviating Hunger <ul style="list-style-type: none"> <li>- Challenges faced by poor communities in cultivating sustainable food sources.</li> <li>- The potential of sustainable farming techniques in alleviating hunger in impoverished areas of Ghana.</li> <li>- Adaptation of traditional agricultural practices to enhance food sustainability in Ghana.</li> </ul> </li> <li>3: Government and Organizations in Promoting Sustainability <ul style="list-style-type: none"> <li>- The government's role in promoting food sustainability for the poor in Ghana.</li> <li>- Successful initiatives promoting food sustainability among the poor in Ghana.</li> <li>- Collaboration between Ghanaian NGOs and international organizations for improved food sustainability.</li> </ul> </li> <li>4: Climate Change and Food Availability <ul style="list-style-type: none"> <li>- The impact of climate change on food production and availability for impoverished Ghanaians.</li> </ul> </li> <li>5: Innovative Solutions and Individual Empowerment <ul style="list-style-type: none"> <li>- Innovative solutions to address food waste and hunger in Ghana's impoverished areas.</li> <li>- The empowerment of poor Ghanaians through community gardens for sustainable food sources.</li> <li>- The role of education and awareness programs in promoting sustainable food practices among poor communities in Ghana.</li> </ul> </li> <li>6: Affordable Alternatives and Traditional Practices <ul style="list-style-type: none"> <li>- Sustainable alternatives to expensive imported foods for impoverished Ghanaians.</li> <li>- Adaptation of traditional agricultural practices to enhance food sustainability in Ghana.</li> </ul> </li> </ol> <p>Note: The themes are not mutually exclusive, as some key ideas could fall under multiple themes.</p> <p><b>Themes - Egypt</b></p> <ol style="list-style-type: none"> <li>1. Food waste and food accessibility for poor communities in Egypt.</li> <li>2. Sustainable farming methods and climate change's impact on food availability for the poor in Egypt.</li> <li>3. Government policy and community empowerment for food security in Egypt's impoverished areas.</li> <li>4. Urban agriculture and its viability as a solution for hunger in Egypt.</li> <li>5. Reducing dependency on imported food and achieving food sustainability in Egypt.</li> <li>6. Cultural preferences and obstacles to adopting sustainable farming practices in Egypt.</li> <li>7. Technology advancements and education for improving access to nutritious food for the poor in Egypt.</li> <li>8. Crops and livestock that could improve food sustainability in Egypt.</li> <li>9. Balancing food affordability and availability for Egypt's poor.</li> <li>10. The impact of the tourism industry on food sustainability for Egypt's impoverished.</li> </ol>
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**Table 4:** Perspectives (an elaboration of Themes).

<p>Perspectives - USA</p> <p>Theme 1: Access to Fresh Produce and Food Insecurity:</p> <ul style="list-style-type: none"><li>- Plus factors:</li><li>- Increasing awareness about food insecurity and its impacts on health and development</li><li>- Growing number of organizations working to provide access to fresh produce in low-income communities</li><li>- Minus factors:</li><li>- Limited resources and infrastructure to provide fresh produce in low-income areas</li><li>- Disparities in food access based on socioeconomic status</li><li>- Interesting factors:</li><li>- Link between food waste and hunger among impoverished Americans</li><li>- Challenges faced by rural communities in accessing nutritious and affordable food</li></ul> <p>Theme 2: Food Sustainability and Community Initiatives:</p> <ul style="list-style-type: none"><li>- Plus factors:</li><li>- Successful urban farming initiatives improving food sustainability in low-income neighborhoods</li><li>- Community empowerment through initiatives like community gardens</li><li>- Minus factors:</li><li>- Lack of affordable grocery stores in low-income areas affecting food sustainability</li><li>- Limited resources and support for community initiatives</li><li>- Interesting factors:</li><li>- Initiatives and policies aimed at reducing food deserts in impoverished areas.</li></ul> <p>Theme 3: External Factors and Food Sustainability:</p> <ul style="list-style-type: none"><li>- Plus factors:</li><li>- Increasing awareness about the effects of climate change on food availability and affordability</li><li>- Potential role of technology in improving food sustainability</li><li>- Minus factors:</li><li>- Limited resources and infrastructure to adapt to climate change impacts</li><li>- Influence of fast food industry on food choices and sustainable practices</li><li>- Interesting factors:</li><li>- Interactions between climate change, fast food industry, and food sustainability for low-income families</li></ul> <p>Theme 4: Education and Awareness:</p> <ul style="list-style-type: none"><li>- Plus factors:</li><li>- Impact of education and awareness campaigns on food choices of low-income individuals</li><li>- Growing number of organizations and programs promoting nutrition education</li><li>- Minus factors:</li><li>- Limited access to education and awareness campaigns in low-income communities</li><li>- Challenges in changing long-standing dietary habits</li><li>- Interesting factors:</li><li>- Different approaches to nutrition education and their effectiveness in low-income communities</li></ul> <p>Theme 5: Ensuring Access to Nutritious and Sustainable Food:</p> <ul style="list-style-type: none"><li>- Plus factors:</li><li>- Growing recognition of the importance of locally sourced foods for nutrition and sustainability</li><li>- Increasing efforts to ensure access to nutritious and sustainable food for all Americans</li><li>- Minus factors:</li><li>- Reliance on processed foods contributing to the food sustainability issue for low-income Americans</li><li>- Limited availability and affordability of nutritious and sustainable food options</li><li>- Interesting factors:</li><li>- Strategies to overcome the barriers and ensure equal access to nutritious and sustainable food for all Americans.</li></ul> <p><b>Perspectives - Ghana</b></p> <p>Theme 1: Access to Nutritious Food and Poverty in Ghana</p> <p>Plus factors:</p> <ul style="list-style-type: none"><li>- Increased awareness of the impact of poverty on access to nutritious food can lead to targeted interventions.</li><li>- Identifying barriers can guide the development of effective programs and policies.</li></ul> <p>Minus factors:</p> <ul style="list-style-type: none"><li>- Poverty limits resources and options, making it difficult for individuals and communities to access nutritious food.</li><li>- Lack of infrastructure and resources exacerbate the problem of food insecurity.</li></ul> <p>Interesting factors:</p> <ul style="list-style-type: none"><li>- Understanding the specific challenges faced by poor Ghanaians in accessing nutritious food can help tailor solutions to their needs.</li><li>- Exploring the intersectionality of poverty and access to nutritious food can reveal unique insights and potential strategies.</li></ul> <p>Theme 2: Sustainable Farming Techniques and Alleviating Hunger</p> <p>Plus factors:</p> <ul style="list-style-type: none"><li>- Promoting sustainable farming techniques can lead to increased food production and availability.</li></ul>
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- Alleviating hunger through sustainable farming can have long-term positive effects on community well-being.

Minus factors:

- Challenges such as limited access to resources, knowledge, and financing can hinder the implementation of sustainable farming techniques.
- Resistance to change and traditional practices may impede the adoption of sustainable farming methods.

Interesting factors:

- Analyzing successful case studies of sustainable farming techniques in Ghana can provide valuable lessons and guidance for future initiatives.
- Investigating how traditional agricultural practices can be adapted to enhance food sustainability highlights the cultural significance of farming practices and preservation of indigenous knowledge.

Theme 3: Government and Organizations in Promoting Sustainability

Plus factors:

- Government support and policies can play a crucial role in promoting food sustainability.
- Collaborations between NGOs and international organizations can leverage resources and expertise to improve food sustainability efforts.

Minus factors:

- Insufficient government funding and limited resources can hinder the effectiveness of sustainability initiatives.
- Organizational and bureaucratic challenges may slow down progress in promoting food sustainability.

Interesting factors:

- Studying successful initiatives can provide insights into effective strategies of government and organizations in promoting food sustainability.
- Understanding the dynamics of collaboration between local and international actors can shed light on the challenges and opportunities in implementing sustainable practices.

Theme 4: Climate Change and Food Availability

Plus factors:

- Recognizing the impact of climate change on food production can lead to proactive measures and adaptation strategies.
- Raising awareness about climate change can mobilize action and support for sustainable food practices.

Minus factors:

- Climate change-induced disruptions, such as extreme weather events and changes in rainfall patterns, can adversely affect food availability for impoverished Ghanaians.
- Lack of resources and capacity to adapt to climate change can exacerbate food insecurity.

Interesting factors:

- Investigating the specific consequences of climate change on different regions and crops in Ghana can inform targeted interventions.
- Exploring innovative approaches to climate-resilient agriculture can generate new solutions and techniques.

Theme 5: Innovative Solutions and Individual Empowerment

Plus factors:

- Innovative solutions can address food waste and increase access to nutritious food for impoverished communities.
- Empowering individuals through community gardens can promote self-sufficiency and enhance food security.

Minus factors:

- Limited access to resources and knowledge may hinder the implementation of innovative solutions.
- Scaling up successful pilot projects can be challenging due to resource constraints.

Interesting factors:

- Examining the impact and scalability of innovative solutions can provide valuable insights for future interventions.
- Understanding the social and economic dynamics of community gardens can shed light on the potential for broader community empowerment.

Theme 6: Affordable Alternatives and Traditional Practices

Plus factors:

- Identifying affordable alternatives to imported foods can improve food access and affordability for impoverished Ghanaians.
- Adapting traditional agricultural practices can enhance food sustainability and preserve cultural heritage.

Minus factors:

- Limited availability and accessibility to affordable alternatives may perpetuate reliance on imported foods.
- Challenges in adapting traditional practices to modern contexts may impede progress and adoption.

Interesting factors:

- Investigating successful examples of affordable alternatives and traditional practices can inspire and guide future initiatives.
- Understanding the cultural and social significance of traditional practices in relation to food sustainability can inform

#### **Perspectives - Egypt**

1. Food waste and food accessibility for poor communities in Egypt.

- Plus: Increased awareness about the issue leads to potential solutions such as food redistribution programs.

- Minus: Limited infrastructure and resources for proper storage and transportation of food, leading to increased food waste.

- Interesting: The cultural significance of food in Egypt and the potential for community-based initiatives to address food waste and improve access to nutritious food.

2. Sustainable farming methods and climate change's impact on food availability for the poor in Egypt.

- Plus: Adoption of sustainable farming practices can improve food production and resilience to climate change.

- Minus: Limited knowledge and resources for farmers to switch to sustainable practices.

- Interesting: The potential for innovative agricultural techniques, such as hydroponics or vertical farming, to mitigate the impact of climate change on food availability.

3. Government policy and community empowerment for food security in Egypt's impoverished areas.

- Plus: Effective government policies can create an enabling environment for community-led initiatives and improve food security.

- Minus: Lack of political will or corruption can hinder effective implementation of policies.

- Interesting: The role of community-based organizations and NGOs in empowering communities to take ownership of their food security.

4. Urban agriculture and its viability as a solution for hunger in Egypt.

- Plus: Utilization of urban spaces for food production can address food insecurity in densely populated areas.
- Minus: Limited access to land and resources for urban farming initiatives.
- Interesting: The potential for vertical farming, rooftop gardens, and aquaponics to maximize food production in urban settings.
- 5. Reducing dependency on imported food and achieving food sustainability in Egypt.
  - Plus: Increased domestic food production reduces reliance on external sources and contributes to the economy.
  - Minus: Limited resources and investment in agriculture, making it challenging to achieve self-sufficiency.
  - Interesting: The potential for promoting traditional Egyptian crops and preserving cultural heritage while improving food sustainability.
- 6. Cultural preferences and obstacles to adopting sustainable farming practices in Egypt.
  - Plus: Incorporating traditional knowledge and practices can enhance the adoption of sustainable farming methods.
  - Minus: Resistance to change or lack of awareness about the benefits of sustainable practices.
  - Interesting: Exploring the intersection of cultural preferences, traditional farming techniques, and sustainable agriculture.
- 7. Technology advancements and education for improving access to nutritious food for the poor in Egypt.
  - Plus: Technology can improve efficiency in food production, storage, and distribution, ensuring access to nutritious food.
  - Minus: Limited access to technology and digital literacy among the poor communities.
  - Interesting: The potential for mobile applications or online platforms to connect food surplus with individuals in need, reducing food waste and improving availability.
- 8. Crops and livestock that could improve food sustainability in Egypt.
  - Plus: Research and development to identify and promote resilient crops and livestock can enhance food sustainability.
  - Minus: Limited research infrastructure and investment in agricultural innovations.
  - Interesting: The potential for promoting drought-resistant crops, alternative protein sources, or indigenous livestock breeds to improve food sustainability.
- 9. Balancing food affordability and availability for Egypt's poor.
  - Plus: Effective social safety nets and targeted subsidies can improve affordability for low-income populations.
  - Minus: Inflation and economic challenges resulting in escalating food prices.
  - Interesting: The potential for promoting sustainable, locally produced food as an affordable alternative to imported goods.
- 10. The impact of the tourism industry on food sustainability for Egypt's impoverished.
  - Plus: Tourism can create opportunities for local farmers and producers by increasing demand for locally grown food.
  - Minus: Unsustainable tourism practices and overconsumption of resources can negatively impact food sustainability.
  - Interesting: Exploring the potential for eco-tourism initiatives that promote sustainable farming practices and support local communities.

**Table 5:** What is missing.

**What is missing - USA**

1. Some missing aspects that can complete the understanding of the topic include:
2. What are the long-term health consequences of limited access to fresh produce in low-income communities?
3. How does food insecurity affect academic performance in children?
4. What resources or programs are available to address food waste and hunger in impoverished communities?
5. How can urban farming initiatives address issues of food affordability and accessibility in low-income neighborhoods?
6. What transportation barriers do rural communities face in accessing nutritious and affordable food?
7. How does the lack of affordable grocery stores affect the overall dietary patterns and nutrient intake of low-income individuals?
8. How does climate change affect the agricultural industry and its ability to provide affordable food for impoverished Americans?
9. How can community gardens provide a sustainable source of fresh produce for individuals living in poverty?
10. What government policies or financial incentives could be implemented to encourage grocery stores to establish themselves in food desert areas?
11. How do processed foods contribute to the prevalence of diet related diseases in low-income communities?
12. How can locally source foods contribute to the economic development and job creation in low-income areas?
13. What marketing tactics do fast food companies use to target low-income populations and how do these affect sustainable food choices?
14. How can technology be utilized to improve food production, distribution, and access in impoverished communities?
15. How do educational programs and campaigns influence the food knowledge and behaviors of low-income individuals?
16. What social and cultural factors contribute to the disparities in food access and affordability across income levels?
17. What collaborative efforts can be made between government, nonprofit organizations, and community members to ensure food security for all Americans?

**What is missing - Ghana**

Some missing aspects that can complete the understanding of the topic include:

1. The impact of globalization and trade policies on food security and availability for impoverished communities in Ghana.
2. The role of gender inequality in influencing access to nutritious food and sustainable food sources in Ghana.
3. The effects of urbanization and the growth of cities on food production and availability for impoverished Ghanaians.
4. The importance of water scarcity and its impact on agricultural practices and food sustainability in Ghana.
5. The potential role of technology, such as irrigation systems or mobile applications, in promoting sustainable food production and addressing hunger in impoverished areas of Ghana.
6. The relationship between land tenure and food security for poor communities in Ghana.
7. The potential impacts of genetically modified organisms (GMOs) and bioengineered crops on food sustainability and poverty alleviation in Ghana.
8. The influence of cultural and traditional practices on food production and consumption patterns in impoverished areas of Ghana.
9. The integration of nutritional education and health programs alongside food sustainability initiatives to address malnutrition and other health issues in impoverished communities.
10. The role of financial inclusion and access to credit in supporting small scale farmers and promoting sustainable food production in Ghana.

**What is missing - Egypt**

Some missing aspects that can complete the understanding of the topic include:

What are the current sources of food for poor communities in Egypt?

How does the lack of access to nutritious food affect the health and wellbeing of impoverished Egyptians?  
 What are the main factors contributing to food waste in Egypt?  
 Are there any existing initiatives or programs in place to address food insecurity in Egypt?  
 What is the current state of food security in Egypt and how has it changed over time?  
 What are some potential solutions to improve agricultural productivity in Egypt and ensure food sustainability?  
 How do social and cultural factors impact food security and sustainability in Egypt?  
 What are the economic implications of food insecurity in Egypt?  
 Are there any specific policies or initiatives that have been successful in improving food security for the poor in Egypt?  
 How do migration and urbanization affect food security and sustainability in Egypt?  
 What are the main challenges faced by smallholder farmers in Egypt and how do they impact food security?  
 How does gender inequality affect food security and access to nutritious food in Egypt?  
 What are the long-term consequences of food insecurity for impoverished Egyptians?  
 How does the international aid and donor community contribute to addressing food security in Egypt?  
 Are there any cultural or traditional practices in Egypt that promote sustainable agriculture and food security?

**Table 6:** Alternative viewpoint, showing negative arguments countering each point uncovered previously by Idea Coach using AI.

Alternative Viewpoints – USA

- Limited access to fresh produce may not have a significant impact on low-income communities since there are alternative options such as canned or frozen fruits and vegetables.
- Food insecurity may have minimal effects on children’s health and development as they can still meet their nutritional needs through other sources such as school meal programs or food banks.
- Food waste does not exacerbate hunger among impoverished Americans since most food waste comes from restaurants or other businesses, rather than households or low-income individuals.
- Urban farming initiatives may be unsustainable in low-income neighborhoods due to limited space, lack of resources, or lack of community support.
- Rural communities face challenges in accessing affordable food, but their reliance on local food sources and self-sufficiency may offset the impact of limited access to nutritious food options.
- The lack of affordable grocery stores does not significantly impact food sustainability for low-income individuals as they can rely on convenience stores or small local markets for their basic food needs.
- Climate change may not have a significant impact on the availability and affordability of food for impoverished Americans, as they rely on food assistance programs and subsidies which help stabilize prices and availability.
- Community gardens may not be an effective solution for low-income individuals as they require resources, time, and knowledge to maintain, which may not be accessible to everyone.
- Initiatives or policies to reduce food deserts in impoverished areas may not be economically or logistically feasible in certain regions, hindering their effectiveness.
- The reliance on processed foods may not contribute significantly to food sustainability issues for poor Americans as they are often more affordable and have longer shelf lives, providing a consistent food source.
- Incorporating locally sourced foods into the diets of low-income individuals may not have significant benefits since they can be more expensive and less reliable in terms of availability.
- The fast-food industry does not have a substantial impact on the food choices and sustainable practices of low-income families as these families prioritize convenience and affordability over sustainability.
- Technology may not be the solution to improving food sustainability for impoverished Americans as access to technology and the necessary infrastructure may pose significant barriers.
- Education and awareness campaigns may not have a significant influence on the food choices of low-income individuals, as other factors such as cost, and convenience often take precedence.
- Ensuring access to nutritious and sustainable food options for all Americans, regardless of income, may not be a realistic goal due to economic disparities and limitations in resources and infrastructure.

Alternative Viewpoints – Ghana

- Some may argue that poverty does not solely determine access to nutritious food in Ghana, as there are other factors such as geographic location and government intervention that play a significant role.
- Critics may question the effectiveness of sustainable farming techniques in alleviating hunger, arguing that they require significant resources and may not be feasible for poor communities with limited access to modern technology and infrastructure.
- Skeptics may argue that the government’s role in promoting food sustainability for the poor in Ghana is limited, and that it is ultimately the responsibility of individuals and communities to find sustainable solutions.
- Some may argue that climate change does not have a significant impact on food production and availability for impoverished Ghanaians, as they rely heavily on traditional agricultural practices that are often resilient to changing weather patterns.
- Critics may argue that addressing food waste and hunger in Ghana’s impoverished areas requires solutions beyond community gardens, such as improving distribution and storage systems, and promoting income-generating opportunities for the poor.
- Skeptics may argue that the lack of infrastructure is not the main barrier to accessing sustainable food options for Ghanaians in poverty, but rather issues such as affordability and cultural preferences.
- Some may argue that traditional agricultural practices are already sustainable in Ghana, as they have been successfully feeding the population for generations and are adapted to local conditions and resources.
- Critics may question the effectiveness of education and awareness programs in promoting sustainable food practices within poor communities, arguing that they often neglect the underlying socioeconomic factors that limit access to nutritious food.
- Skeptics may argue that collaborations between Ghanaian NGOs and international organizations do not always prioritize the needs and perspectives of the poor and can perpetuate dependency rather than fostering sustainable solutions.
- Some may argue that individuals can only do so much to support sustainable food production in Ghana’s impoverished areas, as systemic change and government intervention are necessary for long-term impact.

**Alternative Viewpoints - Egypt**

- How does food waste affect poor communities in Egypt? Alternative viewpoint: Some argue that food waste is not a major concern for poor communities in Egypt, as their main challenge is accessing sufficient food in the first place.
- What strategies can help poor families in Egypt access nutritious food? Alternative viewpoint: There is a belief that poor families in Egypt should rely on their own traditional methods of farming and food production, rather than external strategies that may not be suitable for their unique circumstances.

3. Are traditional farming methods in Egypt sustainable for the environment? Alternative viewpoint: Some argue that traditional farming methods in Egypt are inherently sustainable, as they have been refined over centuries to adapt to the local environment and ecosystem.
4. How does climate change impact food availability for impoverished Egyptians? Alternative viewpoint: There is a belief that climate change is a natural occurrence and that the impact on food availability for impoverished Egyptians is overstated or is a temporary challenge that can be addressed through adaptation measures.
5. Is urban agriculture a viable solution for addressing hunger in Egypt? Alternative viewpoint: Some argue that urban agriculture may not be a viable solution for addressing hunger in Egypt, as it requires substantial resources and infrastructure that may not be readily available in impoverished areas.
6. What role does government policy play in ensuring food security for the poor in Egypt? Alternative viewpoint: There is a belief that the role of government policy in ensuring food security for the poor in Egypt is limited, and that individuals and communities should take more responsibility for their own food security through self-sufficiency.
7. Can community gardens empower impoverished Egyptians to become self-sufficient? Alternative viewpoint: Some argue that community gardens may not be a sustainable or effective solution for empowering impoverished Egyptians to become self-sufficient, as they require ongoing resources and support that may not be available in the long term.
8. How can Egypt reduce its dependency on imported food and achieve food sustainability? Alternative viewpoint: There is a belief that Egypt should prioritize economic development and rely on global trade to meet its food needs, rather than focusing on reducing dependency on imported food and achieving food sustainability.
9. Do cultural preferences limit the range of sustainable food options in Egypt? Alternative viewpoint: Some argue that cultural preferences should not be a factor in determining sustainable food options in Egypt, as cultural practices can adapt and evolve to incorporate new sustainable approaches.
10. What obstacles do impoverished Egyptians face in adopting sustainable farming practices? Alternative viewpoint: There is a belief that impoverished Egyptians face more pressing challenges than adopting sustainable farming practices, and that their focus should be on immediate survival rather than long-term sustainability.
11. Can technology advancements improve access to nutritious food for the poor in Egypt? Alternative viewpoint: Some argue that technology advancements may not effectively improve access to nutritious food for the poor in Egypt, as they may not have the necessary resources or infrastructure to benefit from these advancements.
12. How can education about food sustainability benefit impoverished communities in Egypt? Alternative viewpoint: There is a belief that education about food sustainability may not be a priority for impoverished communities in Egypt, as their focus is on meeting immediate food needs rather than long-term sustainability.
13. Are there specific crops or livestock that could improve food sustainability in Egypt? Alternative viewpoint: Some argue that there is already a wide variety of crops and livestock in Egypt that contribute to food sustainability, and that the focus should be on improving farming practices rather than introducing new crops or livestock.
14. Is food affordability a bigger concern than food availability for the poor in Egypt? Alternative viewpoint: There is a belief that food affordability is not the main concern for the poor in Egypt, as there are more pressing challenges related to food availability and access.
15. What impact does the tourism industry have on food sustainability for Egypt's poor? Alternative viewpoint: Some argue that the tourism industry does not significantly impact food sustainability for Egypt's poor, as the main focus of the tourism industry is on high-end restaurants and hotels rather than local communities.

**Table 7:** Interested audiences.

The next AI analysis deals with the interested audiences for each topic. Rather than just listing the audience for each topic, the Idea Coach goes into the reasons why the audience would be interested, once again providing a deeper analysis into the topic, along with a sense of the stakeholders, their positions, their areas of agreement and disagreement.

<p><b>Interested Audiences - USA</b></p> <ol style="list-style-type: none"> <li>1. Researchers and policymakers interested in addressing food inequity in low-income communities would be interested in questions 1, 4, 6, 8, 9, 12, and 15. These questions explore the impact of limited access to fresh produce, challenges faced by low-income neighborhoods, and potential solutions such as urban farming initiatives and policy changes.</li> <li>2. Health professionals and educators concerned with the well-being of children would be interested in questions 2, 10, and 13. These questions examine the effects of food insecurity on children's health and development, the impact of reliance on processed foods, and the influence of education and awareness campaigns.</li> <li>3. Environmentalists, sustainability advocates, and those working in agriculture would be interested in questions 3, 7, 11, and 14. These questions explore the role of food waste and climate change in exacerbating hunger, the benefits of locally sourced foods, and the potential role of technology in improving food sustainability.</li> <li>4. Community organizers, non-profit organizations, and advocates for social justice would be interested in questions 5 and 9. These questions focus on the challenges faced by rural communities and initiatives or policies that could help reduce food deserts in impoverished areas.</li> <li>5. Overall, these questions appeal to audiences interested in social justice, health and nutrition, environmental sustainability, and community development, as they all seek to address the issue of food inequity and promote access to nutritious and sustainable food options for low-income individuals.</li> </ol> <p><b>Interested Audiences - Ghana</b></p> <ol style="list-style-type: none"> <li>1. Non-governmental organizations (NGOs) working on poverty alleviation and food security in Ghana would be interested in these questions as they directly relate to the issues they are addressing.</li> <li>2. International development organizations and donors may also find these questions relevant as they seek to support sustainable development efforts in Ghana.</li> <li>3. Researchers and academics studying poverty, food security, and sustainable agriculture would have a keen interest in these questions as they contribute to the existing knowledge base.</li> <li>4. Policy makers and government officials in Ghana would find these questions important as they can inform policies and programs aimed at addressing food insecurity and poverty.</li> <li>5. Humanitarian organizations and charities providing food assistance in Ghana would be interested in understanding the underlying causes of hunger and potential solutions.</li> <li>6. Sustainable agriculture practitioners and experts would find these questions pertinent as they relate to their field of expertise and efforts in promoting sustainable farming practices.</li> <li>7. Community leaders and activists working with impoverished communities in Ghana would be interested in these questions as they shed light on the challenges these communities face and potential strategies for improvement.</li> <li>8. Food security and poverty advocacy groups and networks in Ghana would be interested in these questions as they align with their goals of addressing hunger and promoting sustainable food systems.</li> </ol> <p><b>Interested Audiences - Egypt</b></p> <ol style="list-style-type: none"> <li>1. NGOs and organizations working on poverty alleviation and food security in Egypt would be interested in the questions about the effects of food waste on poor communities and strategies for accessing nutritious food. This is because they are directly involved in addressing these issues and may be looking for ways to improve their programs.</li> <li>2. Environmentalists and sustainability advocates would be interested in the question about traditional farming methods and their impact on the environment. They may be looking for ways to promote more sustainable practices and protect Egypt's natural resources.</li> <li>3. Climate change researchers and policymakers would be interested in the question about how climate change affects food availability for impoverished Egyptians. This group would be studying the effects of climate change and looking for ways to mitigate its impact on vulnerable populations.</li> <li>4. Urban planners and policymakers would be interested in the question about the viability of urban agriculture for addressing hunger. They may be exploring ways to integrate urban farming into city planning and promote sustainable food production in urban areas.</li> <li>5. Government officials and policymakers would be interested in the question about the role of government policy in ensuring food security for the poor. They would be looking for ways to improve existing policies and develop new ones to address food insecurity in the country.</li> <li>6. Community development organizations and advocates for social empowerment would be interested in the question about the potential of community gardens to empower impoverished Egyptians. They may be working on initiatives that promote community engagement and self-sufficiency through agriculture.</li> <li>7. Agricultural researchers and policymakers would be interested in the question about reducing Egypt's dependency on imported food and achieving food sustainability. This group would be focused on finding ways to improve domestic food production and reduce reliance on external sources.</li> </ol>
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8. Cultural anthropologists and researchers studying food habits and preferences in Egypt would be interested in the question about the impact of cultural preferences on sustainable food options. They would be interested in exploring how cultural factors influence food choices and finding ways to promote sustainable options within cultural norms.
9. Farming communities and small-scale farmers in Egypt would be interested in the question about obstacles to adopting sustainable farming practices. They may be facing challenges in adopting new methods and would be interested in learning about potential solutions.
10. Technology developers and innovators would be interested in the question about how technology can improve access to nutritious food for the poor. They would be looking for ways to use technology to bridge gaps in food distribution and promote efficient food systems.
11. Educators and community organizers would be interested in the question about the benefits of education about food sustainability. They may be involved in developing curriculum or programs focused on promoting sustainable practices and food literacy.
12. Agricultural researchers and policymakers would also be interested in the question about specific crops or livestock that could improve food sustainability in Egypt. They would be looking for ways to increase productivity and diversify agricultural systems to enhance food security.

**Table 8:** Opposing audiences.

Once again, in the effort to promote critical thinking, the Idea Coach provides a list of groups who would oppose the topic, and for each group explain the rationale for their opposition.

<p><b>Opposing Audiences - USA</b></p> <ol style="list-style-type: none"> <li>1. Large food corporations: They may oppose initiatives to reduce food deserts or promote locally sourced foods because it could affect their profits and market control.</li> <li>2. Industrial agriculture: They may be resistant to urban farming initiatives and policies that encourage sustainable food options as it may challenge their dominant role in the food system.</li> <li>3. Fast food industry: They may oppose efforts to promote healthier food choices and sustainable practices as it could potentially reduce their customer base and sales.</li> <li>4. Government agencies: Some agencies might oppose policies that focus on food sustainability as they may prioritize economic growth and stability over environmental concerns.</li> <li>5. Lobby groups: Various lobby groups representing different sectors of the food industry may oppose policies that aim to reduce food deserts or tackle issues of food insecurity as it could potentially affect their interests and profits.</li> </ol> <p><b>Opposing Audiences - Ghana</b></p> <ol style="list-style-type: none"> <li>1. Large-scale agriculture corporations: These corporations may oppose sustainable farming techniques and initiatives because they often rely on conventional practices that prioritize maximizing profits over environmental sustainability.</li> <li>2. Importers of expensive foods: Importers may oppose the promotion of sustainable alternatives to expensive imported foods because it would directly impact their business and profitability.</li> <li>3. Local farmers using traditional practices: Some local farmers who have been practicing traditional methods for generations may be resistant to adopting sustainable farming practices, as they may perceive them as unfamiliar or unnecessary.</li> <li>4. Politicians influenced by powerful interest groups: Politicians may face opposition from interest groups, such as corporations or lobbyists, who benefit from the current system and may resist any changes that promote sustainable food practices.</li> <li>5. Some consumers: Some consumers may resist sustainable food options due to factors such as lack of awareness, convenience, or preference for certain foods that may not be sustainable or locally sourced.</li> </ol> <p><b>Opposing Audiences - Egypt</b></p> <ol style="list-style-type: none"> <li>1. Industrial farmers: Industrial farmers may oppose discussions on sustainable farming practices in Egypt. They may argue that traditional methods are inefficient and may resist implementing changes that could be required for achieving food sustainability.</li> <li>2. Large agribusiness companies: These companies may oppose discussions on reducing Egypt's dependency on imported food and achieving food sustainability. They benefit financially from the importation and distribution of food products and may resist any changes that could threaten their market dominance.</li> <li>3. Government officials: Some government officials may oppose discussions on the role of government policy in ensuring food security for the poor in Egypt. They may argue that the current policies are sufficient and resist any calls for more significant interventions or changes to existing policies.</li> <li>4. Tourist industry stakeholders: The tourist industry may oppose discussions on the impact of tourism on food sustainability for Egypt's poor. They may argue that catering to tourists' preferences and demands takes priority over sustainable food options for the local population, as tourism is a vital source of income for the country.</li> <li>5. Conservative cultural groups: Certain conservative cultural groups may oppose discussions on sustainable farming practices or changes in cultural food preferences. They may prioritize preserving traditional practices and resist adopting new methods or promoting a wider range of sustainable food options that might challenge their existing cultural values and preferences.</li> <li>6. Local farmers' associations: Local farmers' associations may oppose discussions on changing farming practices or promoting urban agriculture. They may feel threatened by alternative methods and fear competition from urban farming initiatives, which could potentially impact their traditional livelihoods.</li> </ol>
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**Table 9:** Innovations.

The final table selected for the Idea Coach summarization is innovations, shown in Table 9. The table suggests new ideas emerging from the consideration of the questions and the previous summarizations. Once again the ideas are maintained with the constraints of the topic and reflect a disciplined approach to new ideas.

<p><b>Innovations – USA</b></p> <ol style="list-style-type: none"> <li>1. Access to Fresh Produce and Food Insecurity:             <ul style="list-style-type: none"> <li>- Mobile farmers markets that bring fresh produce directly to low-income communities</li> <li>- Community-based food banks that prioritize distributing fresh produce</li> <li>- Farm-to-school programs that provide locally grown produce to schools in low-income areas</li> <li>- Affordable grocery delivery services for individuals who struggle to access fresh food</li> </ul> </li> <li>2. Food Sustainability and Community Initiatives:             <ul style="list-style-type: none"> <li>- Community-owned grocery stores that prioritize sustainable and locally sourced products</li> <li>- Public-private partnerships that support the establishment of urban farms in low-income neighborhoods</li> <li>- Food co-ops that allow low-income individuals to access affordable and sustainable food options</li> <li>- Government policies that incentivize grocery stores to open in food deserts</li> </ul> </li> <li>3. External Factors and Food Sustainability:             <ul style="list-style-type: none"> <li>- Financial support and incentives for low-income individuals to adopt sustainable farming practices in rural communities</li> <li>- Development of climate-smart agriculture techniques to mitigate the impact of climate change on food production</li> <li>- Integration of sustainable food practices and education in schools to promote long-term behavior changes</li> <li>- Implementation of technology-based solutions such as vertical farming, hydroponics, and aquaponics to increase food production in urban areas</li> </ul> </li> </ol>
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#### 4. Education and Awareness:

- Nutrition education programs in low-income communities, teaching budget-friendly and sustainable meal planning and cooking skills
- Development of digital platforms and mobile applications that provide information on affordable and sustainable food options in low-income areas
- Collaboration between schools and local farms to provide hands-on learning experiences and promote awareness of sustainable food practices
- Partnerships between health organizations and community centers to host workshops and events focused on nutrition and sustainable agriculture

#### 5. Ensuring Access to Nutritious and Sustainable Food:

- Financial support for low-income individuals to participate in community-supported agriculture (CSA) programs
- Inclusion of nutrition and sustainability criteria in federal food assistance programs, ensuring healthier and more sustainable food options are available to those in need
- Multi-sector collaborations to establish food recovery programs, reducing food waste and redirecting surplus food to those experiencing food insecurity
- Expansion of farmer's markets in low-income areas, offering a variety of fresh and affordable locally grown produce

#### Innovations - Ghana

1. Mobile farming app: An app that provides information on sustainable farming techniques, weather updates, and market prices for crops, helping farmers in impoverished areas make informed decisions and improve their agricultural practices.
2. Community gardens: Establishing community gardens in impoverished areas, where residents can collectively grow their own produce and have access to fresh and nutritious food.
3. Microfinance programs: Providing microloans or financial assistance to impoverished farmers to invest in sustainable farming practices, such as purchasing organic fertilizers, drought-resistant seeds, or small-scale irrigation systems.
4. Food recovery and redistribution initiatives: Creating programs that prevent food waste and redirect surplus food from restaurants, hotels, and supermarkets to impoverished communities, reducing hunger and supporting sustainable food practices.
5. Agroforestry projects: Encouraging planting trees and crops together to improve soil health, increase biodiversity, and provide long-term benefits for farmers in impoverished areas.
6. Solar-powered irrigation systems: Introducing solar-powered irrigation systems to help farmers in poor communities access water for their crops, reducing reliance on manual labor and improving productivity.
7. Farmer cooperatives: Establishing farmer cooperatives in impoverished areas, where small-scale farmers can pool their resources, share knowledge, and collectively negotiate better prices for their produce.
8. School feeding programs: Implementing school feeding programs that prioritize locally sourced nutritious food, supporting local farmers and providing students in impoverished areas with regular meals.
9. Climate-smart agriculture training: Providing training and workshops on climate-smart agriculture practices to farmers in impoverished areas, helping them adapt to the impacts of climate change on their crops and livelihoods.
10. Food labeling and certification: Implementing food labeling and certification programs that indicate sustainable and locally sourced products, enabling consumers to make informed choices and support sustainable farming practices in impoverished areas.

#### Innovations - Egypt

1. Food waste and food accessibility for poor communities in Egypt:
  - Innovative mobile applications that connect surplus food from restaurants and markets with needy individuals or organizations.
  - Community-led food redistribution programs that collect excess food from businesses and distribute it to those in need.
  - Initiatives to promote and incentivize proper food storage and preservation techniques in households and businesses.
  - Collaborations between food producers, retailers, and non-governmental organizations to develop efficient supply chains for delivering excess food to impoverished communities.
2. Sustainable farming methods and climate change's impact on food availability for the poor in Egypt:
  - Introduction and promotion of drought-resistant crop varieties that can withstand changing climate conditions.
  - Implementation of precision farming techniques and technologies to increase crop yield while minimizing resource usage.
  - Adoption of agroforestry practices to enhance soil fertility, conserve water, and provide additional food sources.
  - Training programs for farmers on climate-smart agriculture practices, such as integrated pest management and water-saving irrigation systems.
3. Government policy and community empowerment for food security in Egypt's impoverished areas:
  - Development of comprehensive national food security strategies that prioritize the needs of impoverished communities.
  - Creation of community-led food cooperatives and farmers' markets to ensure access to affordable and nutritious food.
  - Implementation of targeted social protection programs that provide financial support and resources to low-income families for purchasing food.
  - Support for local food production through subsidies, technical assistance, and access to markets.
4. Urban agriculture and its viability as a solution for hunger in Egypt:
  - Promotion of rooftop gardens and vertical farming systems in urban areas to utilize limited space efficiently.
  - Integration of urban agriculture into urban planning and zoning regulations to encourage its adoption.
  - Creation of community gardens and urban farming initiatives that involve low-income communities in food production and provide them with fresh food options.
  - Development of innovative hydroponic and aquaponic systems that require minimal land and water resources.
5. Reducing dependency on imported food and achieving food sustainability in Egypt:
  - Investment in research and development for improving the productivity and quality of locally-grown crops.
  - Promotion of traditional and indigenous food crops that are well-suited to local conditions and require fewer external inputs.
  - Collaboration between farmers, researchers, and policymakers to identify and address barriers to domestic food production.
  - Improvement of infrastructure and transportation networks to ensure efficient distribution of locally-produced food.
6. Cultural preferences and obstacles to adopting sustainable farming practices in Egypt:
  - Awareness campaigns and education programs to highlight the long-term benefits of sustainable farming practices.
  - Customization of sustainable farming techniques to align with cultural practices and traditions.
  - Engagement of local communities, religious leaders, and influencers in promoting sustainable farming methods.
  - Formation of partnerships between sustainable farming practitioners and traditional farmers to share knowledge and experiences.
7. Technology advancements and education for improving access to nutritious food for the poor in Egypt:
  - Development of affordable and user-friendly mobile applications for accessing nutrition information, affordable food options, and cooking guidance.
  - Introduction of e-learning platforms and workshops to educate low-income communities about the importance of nutrition and healthy eating.
  - Implementation of online marketplaces that connect farmers and local producers directly with consumers, reducing costs and enhancing food accessibility.

- Integration of smart food storage technologies and devices to extend the shelf life of perishable goods in low-income households.
- 8. Crops and livestock that could improve food sustainability in Egypt:
  - Promotion of drought-tolerant crops like millets and sorghum that require less water and can withstand arid conditions.
  - Cultivation of climate-resilient legumes such as chickpeas and lentils, which enhance soil fertility and provide a source of protein.
  - Implementation of improved livestock breeding and management practices to increase productivity while minimizing environmental impact.
  - Exploration of alternative protein sources, such as insect farming or algae cultivation, that reduce the strain on traditional livestock production.
- 9. Balancing food affordability and availability for Egypt's poor:
  - Implementation of price control mechanisms to prevent inflation and ensure affordable food prices for low-income communities.

but we are not given specific tools to enhance critical thinking. As noted in the introduction, in the 1960's, the late professor Anthony Gervin Oettinger of Harvard University began his work on creative thought. We might not think that programming a computer to go shopping is an example of creative thought, but in the 1960's it was (Oettinger, xxx). Now, just about six decades later, we have the opportunity to employ a computer and AI create books that help us thinking critically about a problem. We are not talking here about giving factual answers, actual 'stuff', but really coaching us how to think and how to think comprehensively about the ideas within a societal milieu, a milieu of competing ideas, of proponents and opposers who may eventually agree on solutions that address or resolve issues as thorny as food sustainability. If sixty years ago teaching a computer (the EDSAC) to go shopping was considered a TACT, a technical aid to creative thought, perhaps now co-creating a book of pointed inquiry about a topic might be considered a contribution of the same type, albeit one more attuned to today. The irony is that sixty years ago the focus was on a human programming a machine 'to think,' whereas today it is the case of a machine coaching a human how to think. And, of course, in keeping with the aim of this new to the world journal, the coach is relevant to thinking about any of the topics germane to the journal. This same paper could be created in an hour for any topic.

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## Citation:

Moskowitz H, Rappaport S, Deitel Y, DiLorenzo A, Saharan S (2024) Accelerating Critical Thinking to Industrial Pace and Scale Through AI: Addressing the Global Issue of Food Sustainability. *Nutr Res Food Sci J* Volume 7(1): 1-15.