



Interesting Low-Income School-Age in Nutrition for Better Mental Health: Synthesizing Student Mind-Sets Using Artificial Intelligence to Understand and to Communicate

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Abstract

Using artificial intelligence (LLMs, large language models), the paper shows how one may design a short course for school students, with the focus on mental health and good nutrition. LLMs help to generate mind-sets, different ways of thinking about the topic of mental health and nutrition. LLMs suggest three mind-sets (Ignorant, Cautious, Informed), and then presents the details of a question-and-answer session where each mind-set in turn presented to the audience their point of view about the topic. The paper ends with a simulated question-and-answer session, presenting relevant information. The paper focuses on the combination of explicating a topic with entertaining the school student through a lively presentation of the material.

Keywords: Artificial Intelligence; Low-Income Students; Mental Health; Mind Genomics; Synthesized Mind-Sets

Abbreviations

AI: Artificial Intelligence; ChatGPT: Chat Generative Pre-Trained Transformer; LLM: Large Language Model

Introduction — The Situation Today

In the poorer areas, sometimes it is important to emphasize that eating “right” is part of mental health. How do we communicate this with students from poor neighborhoods who may not know the importance of good nutrition to keep their mental health?

Some school-age adolescents may not recognize the connection between proper nutrition and mental health due to their youth and limited understanding of how their dietary decisions might affect their general welfare. They could consume food based on taste preference rather than taking into account the nutritional content of their meals and snacks. Furthermore, parents or caregivers may not emphasize appropriate eating habits, resulting in a lack of understanding of the significance of proper nutrition.

Conversely, some school-age adolescents may instinctively infer a connection between proper diet and mental well-being. Individuals may see that consuming some meals might result in increased energy and concentration, whereas consuming other foods can

lead to feelings of lethargy and irritability. These students are likely interested in exploring the relation between food and mood and may be receptive to understanding how their diet might influence their mental health.

Studies indicate that consuming a diet rich in processed foods, sweets, and unhealthy fats may lead to mental health conditions including sadness, anxiety, and mood fluctuations. A diet abundant in fruits, vegetables, healthy grains, and lean meats may enhance mood, attention, and general mental health. Nutrient deficiencies, such as insufficient amounts of vitamins and minerals, may adversely affect mental health.

Schools can raise awareness about the significance of proper nutrition for mental well-being by introducing nutrition education programs, offering nutritious meals and snacks, and engaging students in meal planning and preparation, respectively. Furthermore, instructors and parents may demonstrate good eating habits and encourage pupils to choose nutritious foods.

In light of the importance of nutrition for good “mental functioning” we are presenting what could be accomplished with today’s developments in AI, specifically in LLMs (large language models).

The paper focuses on how AI and LLM can synthesize a program of learning, consisting of identifying mind-sets of students regarding nutrition and mental health, followed by a synthesized debate among them regarding eating styles and behaviors, finished by a simulated question-and-answer session. The objective is to explore what such a “short course” might look like, one which could become a template for other school programs dealing with issues involving health-related behaviors [1-3].

The Importance of Individual Differences, and the Contribution of Mind-Sets Provided by Mind Genomics

Understanding mind-sets about students’ mental health and nutrition is crucial in promoting overall well-being and academic success. The topic is important because mental health and nutrition directly impact students’ ability to learn, retain information, and succeed in school. By understanding mind-sets, educators and health professionals can better support students in developing healthy habits and coping strategies.

Mind-set refers to the beliefs and attitudes that individuals hold about themselves and their abilities. It is important because these beliefs can shape behavior and influence mental health and physical well-being. The idea of mind-sets originated from psychologist Carol Dweck’s research on fixed versus growth mind-sets [4]. She found that individuals with a growth mind-set are more likely to persevere through challenges and view failures as opportunities for growth, while those with a fixed mind-set tend to avoid challenges and give up easily. Dweck’s basic ideas were then expanded into topic specific mind-sets, through the emerging science of Mind Genomics.

Mind Genomics is a unique approach which focuses on the criteria that people use to make decisions about their everyday lives. Mind Genomics offers unique insights into consumer behavior and decision-making processes by examining the features of individual preferences, attitudes, and beliefs. This degree of detail reveals patterns which may not be evident using conventional approaches, eventually resulting in more precise communications and suggestions. This intelligence may result in improved communication tactics, tailored experiences, and ultimately, more customer satisfaction and loyalty [5-7].

Part 1: Putting the AI Simulation to Work by Synthesizing Profoundly Different Mind-Sets

Modern artificial intelligence, such as large language models (LLMs), can analyze extensive data to discover patterns and trends, allowing them to synthesize mind-set “features” [8,9]. Experiments with people using responses to test stimuli and then

clustering the data constitutes the traditional method to identify mind-sets. Today’s AI can propose these mind-sets more efficiently and effectively, and then synthesize the pattern of “thinking” for these mind-sets, the combination offering researchers a new capability to “*understand a topic.*”

AI can synthesize mind-set attributes by monitoring social media content to detect prevalent themes and attitudes. This may provide vital insights on the fundamental ideas and values of various groups, enabling researchers to get a deeper understanding of their thinking. Furthermore, AI has the capability to examine extensive sets of consumer behavior data to detect patterns and trends in purchase choices. Businesses may customize their marketing tactics and product offerings to align with the demands and preferences of their target audience by comprehending consumer thinking. Moreover, AI has the capability to examine linguistic patterns in written texts to deduce the author’s attitude. It is especially beneficial in disciplines like psychology and literature, where grasping the fundamental ideas and feelings of persons is essential for analyzing their work.

AI’s capacity to combine mind-set characteristics provides researchers with a helpful tool to understand the beliefs, values, and attitudes of various populations. Researchers may investigate the psychology of people and societies more rapidly and effectively by using artificial intelligence, which can result in new insights about human behavior and motivation.

The first effort for this course comprises the search for mind-sets, the different ways that people exhibit when they deal with a topic about the everyday. The mind-sets constitute fundamental groups of individuals differing from each other in a direct, meaningful way. The mind-sets are germane only to the topic, rather than different ways that people have in the way they live their lives. Thus, the notion of mind-set is differences in granular aspects of the way people deal with the world of the everyday.

Table 1 shows the instructions to the LLM (top, bold type), and then the three mind-sets suggested. These are the Ignorant, the Cautious, and the Informed. The answers to the four questions show that the LLM appears to be able to synthesize these radically different groups, with a simple command.

The specific mandate

The paper now turns to the specific contribution of LLM (ChatGPT 3.5) [10], through a simulation totally created by the LLM. By showing the easy-to-do steps and emphasizing that the actual “interaction” with the LLM is done in about an hour, the paper pres-

INSTRUCTIONS TO THE LLM	
1.	There are a number of PROFOUNDLY AND RADICALLY DIFFERENT mind-sets regarding eating and mental health among the poor teenagers. For each mind-set, tell me the following:
2.	The name of the mind-set
3.	Describe what they eat.
4.	Describe what they think about the connection between mental health and nutrition.
5.	How do we encourage this mind-set to eat more healthfully?
MIND-SET: IGNORANT	
1.	Believes that nutrition and mental health are not related at all, and that what they eat has no impact on their emotional well-being or academic performance.
2.	Typically eats a lot of processed foods, fast food, and sugary snacks because it's convenient and tastes good. They may say that they eat whatever they want because they are young and can handle it.
3.	This mind-set may not think at all about the connection between mental health and nutrition, or may dismiss the idea as irrelevant.
4.	Encourage this mind-set by introducing them to information and research that shows the importance of good nutrition for mental health and academic success, and providing practical tips on how to make healthier food choices.
MIND-SET: CAUTIOUS	
1.	Believes that there may be some link between nutrition and mental health but is unsure of the specifics and how much of an impact it really has.
2.	Tends to eat a balanced diet but may not pay much attention to how different foods affect their mental health. They may say they eat a variety of foods but don't think much about how it affects their mood or focus.
3.	This mind-set may occasionally consider how their diet could be affecting their mental health and make small changes based on how they feel.
4.	Encourage this mind-set by providing more information on specific nutrients that are important for mental health and tips on how to incorporate them into their diet, as well as encouraging them to keep a food diary to track how different foods make them feel.
MIND-SET: INFORMED	
1.	Believes that good nutrition is essential for mental health and academic performance, and actively seeks out information on how different foods can impact their well-being.
2.	Eats a nutrient-dense diet rich in fruits, vegetables, whole grains, and lean proteins because they know these foods support their mental health and cognitive function. They may say they prioritize their health and well-being by fueling their body with the best possible nutrients.
3.	This mind-set is constantly thinking about how their food choices are affecting their mental health and may make adjustments based on their mood, energy levels, and cognitive function.
4.	Encourage this mind-set by providing advanced information on specific nutrients that are especially beneficial for mental health and academic performance, as well as encouraging them to share their knowledge and experiences with peers to help inspire others to make healthier choices.

Table 1: The three mind-sets synthesized by the LLM.

ents to the reader a new vision of what could be accomplished — and more important — at the “grassroots” level worldwide. Table 2 presents the “background” to the synthesized project, from the point of view of the school.

The event — teaching by having a debate among the three mind-sets

The school’s welcome day event centered around a meaningful dialogue among students with different mind-sets — Ignorant, Cautious, and Informed — on the importance of nutrition and mental health in achieving success in school and in life. The issues

concerned topics such as the impact of nutrition on academic performance, strategies for promoting healthy eating habits, the connection between physical and mental health, and the significance of setting realistic goals and practicing self-care. Through an engaging and enlightening discussion, the students emphasized the importance of prioritizing good nutrition and mental well-being for overall success. The school’s commitment to educating its students about the importance of living a healthy life through proper nutrition was evident in the thoughtful and thought-provoking dialogue that took place. Table 3 shows the questions created by the older students, and presented to the debaters, viz., the three mind-sets.

In our school, we are faced with the reality that many of our students come from disadvantaged backgrounds in a poor part of the city. These students may be dealing with a variety of issues, including attention and other psychological problems, which can impact their ability to learn and succeed. One factor that may be contributing to these challenges is the lack of access to nutritious foods.

We believe that good nutrition is essential for not only physical health, but also for mental health and overall well-being. Research has shown that what we eat can have a powerful impact on our mood, energy levels, and ability to concentrate. Unfortunately, many of our students may not have access to the healthy foods they need due to financial constraints.

To address this issue, we are hosting a school assembly to educate our students about the importance of good nutrition for mental health. We want to help them understand the connection between what they eat and how they feel and empower them to make healthier food choices. We recognize that simply talking about the importance of nutrition is not enough, so we are also committed to finding ways to support our students in getting access to better food options.

Our goal is to not only improve the physical health of our students, but also to help them thrive emotionally and mentally. We believe that by addressing the root causes of their struggles, including nutritional deficiencies, we can set them up for success both in school and in life. We are dedicated to supporting our students in every way possible, and we are willing to go the extra mile to ensure that they have the resources they need to reach their full potential.

Table 2: Background to the project.

<p>1. How important is it to eat a balanced diet for overall well-being?</p> <p>Ignorant: <i>"I don't really pay attention to what I eat, as long as it tastes good."</i></p> <p>Cautious: <i>"I try to eat a balanced diet most of the time, but I do have my indulgences."</i></p> <p>Informed: <i>"Eating a balanced diet is crucial for maintaining good health and energy levels."</i></p> <p>2. What impact does nutrition have on academic performance?</p> <p>Ignorant: <i>"I never really thought about how what I eat affects my performance in school."</i></p> <p>Cautious: <i>"I have noticed that when I eat healthier foods, I feel more focused and alert in class."</i></p> <p>Informed: <i>"Nutrition plays a significant role in cognitive function and academic performance."</i></p> <p>3. How can students make healthier food choices in the school cafeteria?</p> <p>Ignorant: <i>"I just pick whatever looks good to me at the moment."</i></p> <p>Cautious: <i>"I try to choose items that are lower in calories and sugar when I can."</i></p> <p>Informed: <i>"Reading nutrition labels and opting for whole foods over processed ones can help students make healthier choices."</i></p> <p>4. What role does exercise play in overall health and well-being?</p> <p>Ignorant: <i>"I don't really like to exercise, so I don't do it often."</i></p> <p>Cautious: <i>"I try to incorporate exercise into my routine a few times a week to stay active."</i></p> <p>Informed: <i>"Regular exercise is essential for maintaining a healthy weight, reducing stress, and improving overall mood."</i></p> <p>5. How does sleep impact academic performance?</p> <p>Ignorant: <i>"I stay up late all the time and it doesn't seem to affect me in school."</i></p> <p>Cautious: <i>"I try to get at least 7-8 hours of sleep each night to feel rested for school."</i></p> <p>Informed: <i>"Sleep is crucial for cognitive function, memory retention, and overall academic success."</i></p> <p>6. What are some healthy snack options for students to have during the school day?</p> <p>Ignorant: <i>"I usually just grab a bag of chips or candy from the vending machine."</i></p> <p>Cautious: <i>"I like to pack nuts, fruit, or yogurt for healthy snacks during the day."</i></p> <p>Informed: <i>"Fruit, vegetables, nuts, and whole grain snacks are excellent choices for maintaining energy and focus throughout the day."</i></p> <p>7. How can students manage stress and anxiety during the school year?</p> <p>Ignorant: <i>"I just try to ignore my stress and hope it goes away on its own."</i></p> <p>Cautious: <i>"I practice mindfulness and deep breathing exercises to help manage my stress levels."</i></p> <p>Informed: <i>"Learning coping mechanisms such as mindfulness, yoga, or talking to a counselor can help students manage stress effectively."</i></p> <p>8. What are some ways students can prioritize their mental health?</p> <p>Ignorant: <i>"I don't really think about my mental health, I just focus on schoolwork."</i></p> <p>Cautious: <i>"I try to take breaks and do things I enjoy to maintain a healthy mind-set."</i></p> <p>Informed: <i>"Prioritizing mental health through self-care practices, therapy, and setting boundaries is essential for overall well-being."</i></p>
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Table 3: The questions presented in the debate, and the answers given by the three mind-sets. All information was synthesized by the LLM.

Final Activity-Classroom Creation of the “Idea Book” of Questions and Answers, a Gift to Future Classes

It is very valuable for students to go to a conversation with people of different opinions and then write down important questions as a gift to the school and to the students who will come after them (see Table 4). It gives the students a chance to think about how important diet and mental health are and how these things affect their general health. Students can learn more about the topic and feel more responsible for promoting a healthy lifestyle in their school group through this activity. Students who participate in this process not only improve their own learning, but they also help their friends learn and grow as a group.

Making a book of questions and answers by students who went to a talk about nutrition and mental health can bring peers together and help them feel like they belong. By working together to make a complete resource for future students, we can encourage each other to work together and support healthy living. The stu-

dents who worked hard to make this important paper also showed how dedicated and passionate they were, which should encourage other people to get involved in their own learning and growth. These students are showing leadership by sharing what they know and what they’ve learned with their peers. They are also setting a good example for the whole school.

Students who have just heard a debate about nutrition and mental health can “gift” a book of questions and answers to later classes as a way to inspire the next generation of students to learn. By putting together a list of important questions and the answers to those questions, these students are actively passing on their knowledge and leaving a legacy that will help other students in the future. This work not only helps them remember what they learned in the argument, but it also motivates their friends to think critically and keep learning throughout their lives. Students can really show how much they understand the topic and how much they want to improve mental health and well-being by doing this.

A. THE BIG PICTURE

HOW DOES NUTRITION AFFECT MENTAL HEALTH IN SCHOOL-AGE STUDENTS? Proper nutrition plays a key role in supporting brain function and mental well-being in school-age students. Nutrient-dense foods like fruits, vegetables, whole grains, and lean proteins provide essential vitamins and minerals that support cognitive function and mood regulation. In contrast, a diet high in processed foods, sugar, and unhealthy fats can lead to inflammation in the brain and negatively impact mental health.

HOW CAN EMOTIONAL WELL-BEING BE SUPPORTED THROUGH NUTRITION IN SCHOOL-AGE STUDENTS? Emotional well-being can be supported through nutrition in school-age students by focusing on foods that promote mental health and mood regulation. For example, foods rich in omega-3 fatty acids, such as fatty fish, walnuts, and flaxseeds, can support brain function and reduce symptoms of depression and anxiety. Additionally, incorporating whole grains, fruits, vegetables, and lean proteins can provide essential nutrients that support emotional well-being.

WHAT IMPACT DOES PROPER NUTRITION HAVE ON ENERGY LEVELS AND MOOD IN SCHOOL-AGE STUDENTS? Proper nutrition plays a significant role in energy levels and mood regulation in school-age students. Balanced meals and snacks that combine carbohydrates, proteins, and fats can provide sustained energy throughout the day and prevent blood sugar fluctuations. Additionally, consuming foods rich in vitamins, minerals, and antioxidants can support mood stability and mental well-being. Encouraging students to fuel their bodies with nutritious foods can help support their energy levels and mood.

WHAT ROLE DOES GUT HEALTH PLAY IN MENTAL HEALTH FOR STUDENTS? Gut health plays a significant role in mental health for students, as the gut-brain axis communicates bidirectionally between the gut and the brain. A balanced and diverse gut microbiome can support positive mental health outcomes, while dysbiosis or imbalances in gut bacteria can contribute to mood disorders and cognitive problems. Encouraging students to consume probiotic-rich foods like yogurt, kefir, and sauerkraut, as well as prebiotic foods like fruits, vegetables, and whole grains, can support gut health and mental well-being.

B. DOING THE RIGHT THING

HOW CAN STUDENTS INCORPORATE MORE WHOLE FOODS INTO THEIR DIET AND AVOID PROCESSED FOODS? Students can incorporate more whole foods into their diet and avoid processed foods by focusing on whole, minimally processed ingredients when preparing meals and snacks. Encouraging students to shop the perimeter of the grocery store, where fresh produce, lean proteins, and whole grains are typically located, can help them make healthier choices. Additionally, involving students in meal planning and preparation can empower them to choose whole foods and experiment with new ingredients.

WHAT ROLE DOES HYDRATION PLAY IN MENTAL HEALTH? Hydration is essential for optimal brain function and mental well-being in school-age students. Dehydration can lead to cognitive impairment, mood swings, and decreased focus and concentration. Encouraging students to drink plenty of water throughout the day can help support their mental health and overall well-being.

WHAT IMPACT DOES SLEEP HAVE ON MENTAL HEALTH AND NUTRITION IN STUDENTS? Adequate sleep is essential for both mental health and proper nutrition in school-age students. Poor sleep can disrupt hunger hormones, leading to cravings for unhealthy foods and overeating. Additionally, lack of sleep can impact mood, cognitive function, and overall well-being. Encouraging students to prioritize good

sleep hygiene can support their mental health and nutrition.

HOW CAN STUDENTS INCORPORATE HEALTHY SNACKS INTO THEIR DAILY ROUTINE FOR OPTIMAL MENTAL HEALTH? Students can incorporate healthy snacks into their daily routine for optimal mental health by choosing nutrient-dense options that provide sustained energy and support cognitive function. Snacks like fruits, vegetables with hummus, nuts and seeds, yogurt, and whole grain crackers with cheese can help keep students satisfied between meals and prevent blood sugar fluctuations. Encouraging students to pack healthy snacks to have on hand at school or while studying can support their mental well-being and focus.

WHAT ROLE DOES PLANT-BASED NUTRITION PLAY IN SUPPORTING MENTAL HEALTH IN SCHOOL-AGE STUDENTS? Plant-based nutrition plays a significant role in supporting mental health in school-age students by providing essential nutrients and antioxidants that support brain function and mood regulation. A plant-based diet rich in fruits, vegetables, whole grains, legumes, nuts, and seeds can help reduce inflammation in the body and support a healthy gut microbiome. Additionally, plant-based foods are typically high in fiber, vitamins, and minerals that support overall well-being. Encouraging students to incorporate more plant-based foods into their diet can help support their mental health and overall health.

HOW CAN STUDENTS CREATE BALANCED MEALS THAT SUPPORT THEIR MENTAL HEALTH AND NUTRITIONAL NEEDS? Students can create balanced meals that support their mental health and nutritional needs by including a variety of nutrient-dense foods from different food groups in each meal. Building meals around a source of lean protein, whole grains, fruits, vegetables, and healthy fats can provide a good balance of macronutrients and micronutrients. Encouraging students to make half of their plate fruits and vegetables, incorporate plant-based proteins like beans or tofu, and choose whole grains like quinoa or brown rice can help them create meals that support their mental well-being and overall health.

HOW CAN A CONSISTENT EATING SCHEDULE IMPACT MENTAL HEALTH IN STUDENTS? Establishing a consistent eating schedule with regular meals and snacks can help stabilize blood sugar levels and support mental health in school-age students. Skipping meals or going long periods without eating can lead to mood swings, irritability, and poor concentration. Encouraging students to eat a balanced breakfast, lunch, and dinner, as well as nutritious snacks, can help support their mental well-being.

WATCHING OUT FOR PROBLEMS

HOW DOES A LACK OF KEY NUTRIENTS AFFECT MENTAL HEALTH IN SCHOOL-AGE STUDENTS? A lack of key nutrients like omega-3 fatty acids, vitamin D, B vitamins, and magnesium can negatively impact mental health in school-age students. These nutrients play a crucial role in brain function, mood regulation, and stress management. Encouraging students to consume a varied and balanced diet that includes sources of these nutrients can help support their mental well-being.

HOW CAN NUTRITIONAL DEFICIENCIES AFFECT A STUDENT'S ABILITY TO LEARN AND RETAIN INFORMATION? Nutritional deficiencies can have a significant impact on a student's ability to learn and retain information. For example, a lack of iron can lead to fatigue and poor concentration, while inadequate omega-3 fatty acids can impair cognitive function and memory. Providing students with nutrient-rich foods and ensuring they meet their daily nutrient requirements can support their learning and academic performance.

HOW CAN STUDENTS AVOID THE TRAP OF EMOTIONAL EATING AND MAKE HEALTHY FOOD CHOICES INSTEAD? Students can avoid the trap of emotional eating and make healthy food choices by practicing mindful eating and developing a positive relationship with food. Encouraging students to tune into their hunger cues, eat when they are truly hungry, and choose nutrient-dense foods can help prevent emotional eating episodes. Additionally, teaching students healthy coping mechanisms for dealing with stress, such as exercise, journaling, or talking to a trusted adult, can support their mental health and prevent emotional eating.

WHAT IMPACT DOES A DIET RICH IN SUGAR AND PROCESSED FOODS HAVE ON MENTAL HEALTH IN SCHOOL-AGE STUDENTS? A diet rich in sugar and processed foods can have a negative impact on mental health in school-age students. Consuming high amounts of sugary foods and beverages can lead to blood sugar spikes and crashes, resulting in mood swings, irritability, and fatigue. Additionally, processed foods often lack essential nutrients that support brain function and mental well-being. Encouraging students to limit their intake of sugary and processed foods and focus on nutrient-dense whole foods can help support their mental health.

Table 4: The “book of questions and answers” synthesized by LLM, representing what the students in the school would have created after attending the debate among the three mind-sets

Discussion and Conclusions

Nutritional problems among low-income students are a major problem that has a big effect on their health and academic success. Many students with low incomes can't afford healthy foods, so they don't eat them. This makes hunger and the accompanying health issues all too common. Not getting enough food can hurt their brains, make it harder for them to focus, and make their mental health worse in general, which can make it harder for them to do well in school [1-10].

Teaching students from low-income families how good eating affects their mental health and success is a great way to give them the power to make better choices and improve their general health. By teaching students about the link between nutrition and brain function, teachers can help them understand how the foods they eat affect their mental health and how well they do in school. Knowing this can inspire students to choose healthy foods and form good eating habits that will help them reach their academic goals.

One new way to teach students about nutrition, performance, and mental health is to use Large Language Models (LLMs), like artificial intelligence, to combine lessons on these topics. Using new technology, teachers can make lessons that are fun, useful, and fit the needs and learning styles of all their students. With an LLM, it becomes easy to create custom material which fits the needs and interest of each student. This makes learning more effective and lasting.

Empowering students to be more involved in their learning through exercises and group projects can help them understand and remember what they are learning. Teachers can help students feel responsible for their own learning by giving them hands-on activities like planning a course on nutrition, performance, and mental health. This engaging method makes it easier for students to use what they've learned in real life and stresses how important good eating is for doing well in school.

Setting up a competition for student teams to make the best course on nutrition, performance, and mental health can encourage students to be more creative and involved. In order to get students to actively join in the learning process and show what they know, teachers can encourage friendly competition and teamwork. This method of learning by doing not only helps students remember important ideas, but it also builds important skills like problem-solving, teamwork, and communication.

Finally, the ability to use artificial intelligence as a new teaching tool without spending a lot of money has the potential to completely change how teachers teach and get students interested in learning. Using AI, teachers can make learning experiences which are dynamic and engaging, fitting each student's wants and tastes. This new way of teaching encourages active and collaborative learning,

giving students the power to take charge of their own learning, and encourages daily knowledge creation.

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Bibliography

1. Almorai NM., et al. "Addressing nutritional issues and eating behaviours among university students: A narrative review". *Nutrition Research Reviews* (2024): 1-16.
2. Li X., et al. "How does the university food environment impact student dietary behaviors? a systematic review". *Frontiers in nutrition* 9 (2022): 840818.
3. Vélez-Toral M., et al. "It's Important but, on What Level?": Healthy Cooking Meanings and Barriers to Healthy Eating among University Students". *Nutrients* 12.8 (2020): 2309.
4. Dweck CS., et al. "Mindsets: A view from two eras". *Perspectives on Psychological science* 14.3 (2019): 481-496.
5. Gere A., et al. "Non-Meat Analogs-A Mind Genomics Cartography of their perceived health benefits." *Elsevier eBooks* (2023): 569-588.
6. Harizi A., et al. "A mind genomics cartography of shopping behavior for food products during the COVID-19 pandemic". *European Journal of Medicine and Natural Sciences* 4.2 (2020): 25-33.
7. Moskowitz HR., et al. "Founding a new science: Mind genomics". *Journal of sensory studies* 21.3 (2006): 266-307.
8. Valmeekam K., et al. "On the planning abilities of large language models-a critical investigation". *Advances in Neural Information Processing Systems* 36 (2023): 75993-76005.
9. Wei J., et al. "Emergent abilities of large language models". *Transactions on Machine Learning Research* (2022).
10. Abdullah M., et al. "ChatGPT: Fundamentals, applications and social impacts". In *2022 Ninth International Conference on Social Networks Analysis, Management and Security (SNAMS)*. IEEE. (2022): 1-8.