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Research Proposal

CHANGEMAKERS: CREATIVITY AND VALUE CREATION
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How Diet Affects Students' Academic Performance: A Research Proposal

1 Introduction

A healthy diet is one of the most important factors for a student succeeding on their chosen course. Without consuming the adequate nutrients required for good physical health, students may focus less, learn less effectively and miss more lectures due to sickness (Purtell & Gershoff, 2015). Not only does eating healthy reduce the chance of falling ill, it's also critical for brain health, which is needed for succeeding academically. Despite this, universities don't recommend healthy eating enough to students. While most universities do suggest dedicating a minimum of 25 hours to independent learning per week (Think Student, 2021), students will struggle to meet that quota if they are not eating a healthy diet.

1.1 Rationale

1.1.1 Purpose of study

The purpose of this study is to test the hypothesis and compare the results with similar previous studies. Additionally, it is to increase awareness of the impact diet has on academic performance, which in turn will hopefully cause positive dietary changes at UWTSD campus cafes.

1.1.2 Hypothesis

The hypothesis is that the more times a student eats out per week, skips breakfast and eats from the campus café, the lower the grade in their last assignment will be. This is based on previous literature observing a trend of poor nutritional habits leading to lower academic achievement.

1.2 Dependent and independent variables of study

The dependent variables of the study are the questionnaire responses that the students give regarding their dietary patterns and academic performance. Whereas, the independent variables are the questions in the questionnaire, and the fact that the study participants are all students at UWTSD, based in the IQ campus.

2 Literature Review

2.1 Importance of research area

This research area is important because a big function of universities is to educate students with the necessary skills and knowledge to have a positive impact in the workplace. Ideally, the study and educational habits students learn in university will stick with them throughout their careers, helping them progress in their chosen field (Lazell, 2024). With this being said, the same could be applied to student dietary habits as well. If universities encouraged healthy eating, from the evidence of poor diet leading to lower academic performance, then students may also potentially bring the practice of good nutrition with them into their careers. This alongside their good educational practices, will further improve their chances of success in their chosen professions. Therefore, the reason this research area is important is that with mounting evidence of the link between diet and cognition, universities will be more likely assess the quality of food they provide to students at their respective campuses.

2.2 Current state of development

There were many studies published in this field of research in 2024, which shows there is a lot of scientific interest around this topic. Two studies will be reviewed, both published in 2024.

One study looked at whether strict adherence to the Mediterranean Diet was associated with better academic achievement in Spanish students. A Mediterranean diet generally consists of: legumes, beans, seafood, white meat, fruits, vegetables with moderate wine and red meat consumption. 266 first-year students from the University of Castilla-La Mancha, Spain were involved in the study. The study took place in the academic year 2017-2018, so isn't as up to date as the publish date may suggest. After controlling for potential confounders, it was found that students who adhered to the diet more closely had significantly higher scores than students who adhered less (Alfaro-González et al., 2024). Potential confounders that were controlled for were age, weight and physical activity. The authors of the study theorised that the Omega-3 fatty acids found in fish, which is eaten quite frequently on a Mediterranean Diet, contribute to good brain health, which might have contributed to the positive correlation to academic performance in students adhering to the diet (Dyall, 2015). Secondly, they found that the less sweets and carbonated beverages a student consumed, the higher their academic performance, which aligns with scientific literature noting an association between sugar consumption and poorer cognitive outcomes (Kendig, 2014).

Another study published in 2024 looked at how eating, drinking and smoking habits impacted medical students at Damascus University. Many studies have been conducted in this research field on the relationship between diet and academic performance, however this study chose to specifically test during the students' exam periods to see if they noticed any changes. Self-administered paper questionnaires were handed out randomly to students in multiple classes. The results were then analysed using Spearman's rank correlation (Gauthier, 2001) to examine the relationship between diet behaviour and average students' grades from the last two semesters. Confounding variables such as age and sex were adjusted for in the results model. The results showed that the higher the weekly fast food consumption, the lower the students' grades were ($B=0.583$, $p=0.038$) and higher consumption of instant coffee also displayed a negative association (Bitar et al., 2024).

2.3 Theoretical models

After reviewing current literature in this research field, the most common theoretical model for conducting a study of this type is to first decide on which institution to survey students from. This could be a university or another educational institution. Secondly, like most studies, is to establish a hypothesis and methodology. Most hypotheses are that poorer diet results in lower academic performance. Once the hypothesis is established, most studies in this field use paper style questionnaires to gain information on students' diets and find out their average grade. This can lead to errors in reporting, but it is still the most accurate way of gathering data without also infringing in people's privacy. Finally, results are presented in the form of graphs and charts in order to observe associations and patterns within the data.

Table 2 – Agreement with the dietary recommendation based on each item of the Mediterranean Diet Adherence Screener (MEDAS) (14-item score) by sex.

	Recommendation	Agreement with the recommendation		No agreement with the recommendation		P (χ^2)
		Men	Women	Men	Women	
1. Do you use olive oil as main culinary fat?	Yes	91.8	90.0	8.2	10.0	.572
2. How much olive oil do you consume in a given day (including oil used for frying, salads, out-of-house meals, etc.)?	≥ 4 tbsp	39.7	28.5	60.3	71.5	.034
3. How many vegetable servings do you consume per day? (1 serving: 200 g [consider side dishes as half a serving])	≥ 2 (≥ 1 portion raw or as a salad)	32.8	40.8	67.2	59.2	.142
4. How many fruit units (including natural fruit juices) do you consume per day?	≥ 3	36.9	26.2	63.1	73.8	.037
5. How many servings of red meat, hamburger, or meat products (ham, sausage, etc.) do you consume per day? (1 serving: 100–150 g)	< 1	47.1	61.1	52.9	38.9	.012
6. How many servings of butter, margarine, or cream do you consume per day? (1 serving: 12 g)	< 1	94.2	96.1	5.8	3.9	.425
7. How many sweet or carbonated beverages do you drink per day?	< 1	88.3	94.3	11.7	5.7	.048
8. How much wine do you drink per week?	≥ 7 glasses	2.7	1.0	97.3	99.0	.240
9. How many servings of legumes do you consume per week? (1 serving: 150 g)	≥ 3	38.0	32.9	62.0	67.1	.339
10. How many servings of fish or shellfish do you consume per week? (1 serving 100–150 g of fish or 4–5 units or 200 g of shellfish)	≥ 3	29.2	32.0	70.8	68.0	.585
11. How many times per week do you consume commercial sweets or pastries (not homemade), such as cakes, cookies, biscuits, or custard?	< 3	46.3	46.3	53.7	53.3	.941
12. How many servings of nuts (including peanuts) do you consume per week? (1 serving 30 g)	≥ 3	25.6	17.9	74.4	82.1	.089
13. Do you preferentially consume chicken, turkey, or rabbit meat instead of veal, pork, hamburger, or sausage?	Yes	68.9	70.3	31.1	29.7	.778
14. How many times per week do you consume vegetables, pasta, rice, or other dishes seasoned with sofrito (sauce made with tomato and onion, leek, or garlic and simmered with olive oil)?	≥ 2	69.7	61.8	30.3	38.2	.144

Values are percentages. Bold values indicate statistical significance $P < .05$.

Figure 1: Example Questionnaire (Alfaro-González et al., 2024)

3 Methods

A draft survey will be carried out before the final one. The Author has already made the mistake of not doing a draft survey in their second assignment for the module *Contemporary Challenges*, at Level 4. They were tasked with carrying out a bin audit for the Environmental Management System (EMS) at UWTSD. This involved asking students at the IQ campus several questions about waste management and recycling on campus. Despite being advised by the module lecturer, them and their classmate didn't conduct a draft survey, which lead to some problems. Upon finishing the survey, they quickly realised that the questions created confusion, based on the response from the participants. However, by that point it was already too late. This led to skewed data and impacted the results of the study.

Students at the IQ campus and the Swansea College of Art campus will be surveyed in order to capture a more diverse pool of students, in an attempt to avoid bias. My aim is to survey 100 students. More students could have potentially been surveyed; however, a lot of students are busy and don't have the time to participate in a survey. Furthermore, those suffering from eating disorders or allergies may not feel comfortable disclosing their eating habits. The aim is to survey 100 people in around 3 hours, 3 hours and a half at the most.

The sampling method that will be used is random sampling. This means purposefully avoiding surveying certain students based on their appearance or any other preconceived notions. Random sampling is a popular survey method as it is the most unbiased data collection method, unbiased data is always more valuable than biased data (Taylor, n.d.).

3.1 Measuring instruments

The measuring instruments that will be used are: a pen to note down responses, a watch to track the time and 100 paper questionnaires for capturing student responses.

3.2 Sample Questionnaire

Q1) How often do you eat breakfast every week?

Never

1-2 times

3-4 times

Q2) How many times do you purchase food from the university café per week?

Never

1-2 times

Every time I have lectures

Q3) How many times do you eat out per week?

Never

1-2 times

3-4 times

Q4) What is the grade you got in your last assignment?

40-50%

50-60%

60-70%

3.3 Methodological review

There are other notable sampling methods that could have been used for this study. These include: Systematic sampling, stratified sampling and cluster sampling. To briefly summarise them: Systematic sampling is selecting for specific individuals, stratified sampling involves dividing participants into subclasses with notable distinctions e.g. construction and environment students. Finally, cluster sampling is similar to stratified sampling, in that it also divides populations into subclasses. The difference is that it randomly selects a subclass, rather than specifically selecting a subclass (Taylor, n.d.).

4 Results

The results would mainly be displayed in the form of charts. A combination of bar and pie charts would be used, as they are more visually appealing than a table, yet still facilitate comparison between different questions and categories.

5 Evaluation

5.1 Potential impact of research

The results of this research will hopefully increase understanding between students' quality of diet and academic performance. This will in turn hopefully encourage UWTSD to promote healthy eating to its students and reconsider the food options at the various UWTSD campuses cafes. Based on my current assessment of the nutritional quality of food sold at the IQ campus, more healthy eating options could be made available and there should be an increase in options for those suffering with food intolerances. Not accommodating for a food intolerance is now considered a form of discrimination in the UK.

5.2 Limitations of study

A big limitation of this study is that only 100 students will be surveyed due to time limitations. This will inevitably produce a more biased result, as the sample size isn't big enough (Dyall, 2015). Furthermore, correlation doesn't equal causation, so other variables must be accounted for, such as how much sleep students get and whether their grade on their last assignment is representative of their average grade. A student may have only scored 45% on their last assignment, but average 60% over the course of the academic year. It is not uncommon for that situation to occur, as naturally students may be more competent and knowledgeable in certain modules rather than others.

6 Reference List

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