



National Certificate of Educational Achievement
TAUMATA MĀTAURANGA Ā-MOTU KUA TAEA

Exemplar for Internal Achievement Standard

Home Economics Level 3

This exemplar supports assessment against:

Achievement Standard 91468

Analyse a food related ethical dilemma for New Zealand society

An annotated exemplar is an extract of student evidence, with a commentary, to explain key aspects of the standard. It assists teachers to make assessment judgements at the grade boundaries.

New Zealand Qualifications Authority

To support internal assessment

	Grade Boundary: Low Excellence
1.	<p>For Excellence, the student needs to analyse comprehensively a food related ethical dilemma for New Zealand society.</p> <p>This involves critically evaluating the viewpoints of different stakeholders and outlining some possible consequences and challenges for New Zealand society.</p> <p>This student has critically evaluated the viewpoints for and against the fortification of processed food. Evidence is provided to support the evaluation. Benefits to the government and the lower socio economic group are explained (1) (3). Questions are raised around how effective fortification of food is (2) (7).</p> <p>The underlying beliefs, attitudes and practices of each group are evaluated and questions raised around how ethical each viewpoint is. The ethics behind a 'mass medicate' approach is challenged (3) (4). The opposing perspective is also questioned (6) (7). The challenge between individual rights and a common good approach is highlighted (8).</p> <p>For a more secure Excellence, the student could explore more challenges for New Zealand society to ensure a beneficial solution is available, for example that the fortification of bread alone will not provide sufficient folate.</p>

A lack of folic acid in a pregnant women's diet can lead to birth defects like spinabifida... But is it really necessary to fortify all bread just to help only 4% of the population who may have these problems? The most common place to find folic acid is dark green leafy vegetables, citrus fruits, lentils etc. Low income families are more likely to buy bread which is cheaper than fruit and vegetables that cost more so by buying fortified bread they have a higher chance of getting more folate in their diet. Cost may be a huge factor in the government's decision about whether or not to fortify folate into bread too. Each baby born with spinabifida costs the health system \$400,000. And in 2004, 16 babies were born with spinabifida and 29 pregnancies were terminated after scans showed the condition. Replacing the folate which is removed from wheat during milling would cut spinabifida occurring down by 80% and the total birth defects down by 40%. (1). A lack of folic acid in these pregnant women's diets may have caused their child to have spinabifida so fortifying folate into bread could stop this. The government are delaying plans to add folic acid to bread for three years, it will cost the government about 10 million in health costs and result in the equivalent of a classroom full of babies being aborted!

1

A good point about fortification of breakfast cereals is that if someone doesn't eat certain foods and is lacking in a certain nutrient then by eating breakfast cereals that have that nutrient fortified in it they will be getting that nutrient. Although our bodies can tell the difference between synthetic and natural nutrients in food, our bodies don't like synthetic nutrients and don't absorb the majority of them. So people are buying these cereals under the false belief that they will be absorbing the full amount of that particular nutrient in their cereal which they won't, so are they really better off? (2) So if we can't absorb most of the nutrients then is there really any point in having them in there? Also just because if we did eat lots of fortified foods that doesn't mean we could eat unhealthily. At the end of the day you still need to be eating a well-balanced diet because of all the other benefits as well.

2

Fortifying folate into bread is a cheap process which only cost ½ a cent per loaf of bread. It's cheap enough so why not do it? But is this taking away the rights of everybody by adding folate to all bread so that people don't get a choice about whether they want it or not? Is it ethically right to "mass medicate" people? Fortifying nutrients into all bread is taking away people's rights. Should everyone be forced to eat fortified bread just because a small number of the population don't follow the health advice that they are given? And is it ethically right to do this? Bakers are suggesting that some bread should be fortified and some not, that way people aren't forced to eat bread with folate in it if they don't want to and it isn't violating people's rights. Is informed voluntary consent best? If so why depart from that when it comes to fortifying bread? Wouldn't it just be easier to educate people about the importance of a high folate diet rather than forcing everyone to eat fortified folate in bread against their will? People who are well educated will already know about folate and taking supplements. Some people who may be less educated are low socio economic people. They may not even know when they are pregnant let alone about folate, how much you need and where you get it from. So fortifying bread would benefit low socio economic people as it helps them get the folate that they need. It also helps their babies stay healthy and not develop birth defects from lack of folate if they don't know if they're pregnant or not.

3

Most people who are against the fortification of folate to bread are simply against having their rights taken away. They value an individual's right to make their own decisions. They believe "each person has a fundamental right to be respected and treated as a free and equal

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rational person capable of making his or her own decisions". (3) One person said "I want freedom of choice. We do not get it with fluoride in our water..... (Trev) (4)." This person has taken the ethical freedom of rights approach and believes in freedom of choice. Why should we be forced to have folate fortified bread if we don't want to?

Whereas Rotorua paediatrician Johan Morreau says doctors are "intensely frustrated" by the delay in folate fortification to bread and also "what should have been a public health decision has become the subject of a political bun-fight. There is no scientific basis to justify the delay". Johan appears to take the common good ethics approach to this dilemma. Is this an ethical dilemma or is it a public health decision? And is it really necessary to fortify all bread just to help only 4% of the population?

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There are also health concerns with fortified folic acid too. Two peer-reviewed US studies have linked too much folate to higher rate of prostate cancer and inflammatory bowel disease in children. Also in elderly people having high amounts of folate lowers their amount of vitamin B12. This can lead to neurological damage. (5) There is also new research that there may be a link between prostate cancer and colon cancer being aggravated by high amounts of folate. (6) It's not official but if this was the case and you had one of these cancers would you want to risk aggravating it by eating bread which has been fortified with folate? The government must make sure that the folate definitely won't affect their health before making the decision whether or not to fortify all bread.

6

If all bread is fortified with folic acid this doesn't necessarily mean that this is a permanent solution. Fortifying folate into bread still doesn't give pregnant women and people in general the right amount of folate that they are meant to have each day. Pregnant women would still need to take a folic acid supplement as well. Also fortifying folate into bread would mean that to get the recommended amount of folate each day a woman would have to eat 11 slices of bread! Most people don't eat that much bread each day (7). Most women only eat 1.5 pieces of bread each day (8). But on the other hand at least it would be providing a source of some folate which may benefit people who would have otherwise had none. It would be a lot easier for these people to just take folate supplements wouldn't it? Fortifying folate into bread may give women a false sense of security. They may think that if they eat bread that they will have healthy babies but in actual fact they may not realise just how much bread they have to eat each day (11 slices).

7

People have very different opinions about fortification of folate in bread and strong views on individual rights. One person's opinion was "so instead of mandatory, perhaps we should lobby to have separate choices of bread in the grocery store "folate fortified (decrease chances of having a child with NTD) or "no folate additives (anything can happen)" (Tui) - (9). This person is obviously challenging the common good ethics approach and believes that fortifying folate into bread will help prevent neural tube defects. I have contacted Sanitarium to find out their opinion about fortifying breads and cereals and they responded with "we feel that food fortification is a method of improving the nutritional balance in the diet of consumers as it can restore nutrients which have been lost during processing and is an important measure of minimising the risk of nutrient deficiencies occurring amongst consumers". Sanitarium has also taken the common good approach to ethics and believes that everyone's health will benefit from the fortification of foods.

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(References 1 – 9 were listed).

	Grade Boundary: High Merit
2.	<p>For Merit, the student needs to analyse, in depth a food related ethical dilemma for New Zealand society.</p> <p>This involves:</p> <ul style="list-style-type: none"> • exploring the underlying, beliefs, values and practices associated with those holding contrasting viewpoints • explaining how these relate to the ethical dilemma. <p>The underlying beliefs and practices of the breakfast cereal industry have been explored (1). Evidence is provided to support the explanation. The ethical issue of mass medication is raised (1).</p> <p>An issue of the accuracy of food labelling is highlighted as a possible reason for not fortifying food (2). This concern is part of the reason, along with individual rights, for why the Bakers' Association is opposed to mandatory fortification of all bread (2). While one study suggests excessive folate intakes could be linked to cancer, another is inconclusive (3).</p> <p>The ethical principle of individual rights is explored with evidence to challenge the fortification of bread (4). Evidence is included to show that even if people are aware of the benefits of folate intake, not all will take it (5). Further supporting evidence is included, explaining how people with a lower socio economic status would benefit from fortified bread (6).</p> <p>To reach Excellence, the student could critically evaluate more of the underlying beliefs of each group and explore the challenges for more equitable outcomes for everyone in society.</p>

In the 1960's breakfast cereal choice was porridge, weetbix, ricies, cornflakes or honeypuffs. Now breakfast cereals have become more and more processed and very few resemble the original grains they started from. With all the processing, many vital vitamins and minerals are lost. Some of the more popular breakfast cereals among children include Milo cereal, Coco pops, Cheerios, Nutrigrain and weetbix. Most of these breakfast cereals have been fortified with nutrients such as calcium, iron, B vitamins such as Niacin, Thiamine, Riboflavin and Folate. The advertising associated with these cereals implies they are nutritionally good choices eg Nutrigrain advertisements claim: Nutrigrain has what it takes to build you into an iron man. Nutrigrain contains 32.0g sugar/100g. At a time when obesity is continuing to increase (1997, 17% Adult Males and 20.6% Adult females were obese). Is it ethical that these high sugar breakfast cereals are being promoted as healthy when they could actually be contributing to this obesity epidemic? Sanitarium obviously believes so - they believe that "food fortification is a method of improving the nutritional balance in the diet of consumers as it can restore nutrients to food products which may be lost during the processing and is an important measure of minimising the risk of nutrient deficiencies occurring amongst consumers." They have the belief that nutrients added to the cereals would be there anyway so by replacing them during processing they are not actually changing the nutrient content of the original food. They have taken The Common Good Approach to Ethics as they believe by fortifying breakfast cereals, all of society who buys their cereals will benefit. They do not seem to be concerned that some people are consuming their cereals and don't actually require more of the nutrients that their breakfast cereals claim to contain or that some of their cereals are too high in sugar.

Student 2: High Merit

NZQA Intended for teacher use only

1

A study by a Christchurch food scientist for the Environmental Science and Research highlighted problems with questionable labelling of various fortified foods (1). Nearly 58% of the samples of baby food, cereal and fruit drinks that were compared to their label claims did not meet them. 15% had fewer nutrients than the label claimed, potentially in breach of the fair trading act, which prohibits false representations of products? So not only might these foods have less in them than the label claims, the body may be only using half of that which is in them anyway possibly leading to only a negligible amount being used by the body. Some parents may be falsely believing that by buying these breakfast cereals they are ensuring that their children and themselves, are getting plenty of important nutrients which may lead them to believe they may not need to ensure their children (or themselves) are getting a balanced diet by eating plenty of fresh fruit and vegetables, breads and cereals, meat and alternatives and milk and milk products. This is a concern that is also voiced by the president of the Bakers Association, Laurie Powell. (2). He was against the immediate addition of folic acid to all bread as women would still have to take supplements to reach the recommended 800µg/day to prevent Neural Tube Defects in their unborn children, but he was afraid that because the women knew the bread contained folic acid they may not think that they would need to take the supplements anymore. (It is expected that the compulsory addition of folic acid to bread will still only supply 140µg a day, as most women only have 1.5 slices of bread per day (3)). Laurie Powell wants to preserve the people's right to choose whether they buy a bread with extra folate in it or not and believes the voluntary folic acid fortification being done by bakers now is the appropriate way to go, provided the Government supports an advertising campaign to educate the public about it. (4)

2

One argument against the compulsory fortification of bread with Folic acid (5) quotes 2 peer reviewed US studies that have linked excessive folate intakes to higher rates of prostate cancer in men and inflammatory bowel disease in children. There is also concern that in elderly people, high levels of folic acid might hide low levels of vit B12, which can lead to neurological damage. Another study involving 35 000 people in several countries since the mid 1990's, appears to contradict this. Otago University professor of human nutrition Murray Skeaff said research yet to be published found "no significant increase or decrease" in cancer rates between those taking folic acid and those not (6).

3

It would seem that many people who are against the fortification of breakfast cereals and bread are against having their choices/rights taken away. These people have taken the Rights Approach. They value an individual's right to make one's own mind up whether they take extra nutrients or not. They believe "each person has a fundamental right to be respected and treated as a free and equal rational person capable of making his or her own decisions."(7). By making the addition of Folic Acid to bread mandatory, this is taking away the right of individuals to choose whether they consume extra folic acid or not. Richard Book is one such individual. (8) He questions whether there is an essential need to fortify all bread with Folic Acid as there are already folic acid supplements readily available on the market and it is already added to many breakfast cereals and bread. He also quotes that New Zealand women's folate levels had improved over the past few years with the voluntary fortification of bread already. This is confirmed by the 2008/09 Adult Nutrition Survey that found only 4% of women aged 16-44yrs, had low enough folate levels to cause a high risk of neural tube defects in the unborn children. Is it necessary to fortify all bread to help 4% of the population?

4

The Ministry of Primary Industries has had 2 studies carried out into the folic acid issue. A telephone survey of 1000 women in 2010, found that more than half knew of the need for folic acid before or during pregnancy. Of those women who were pregnant, only 41% started taking it before conception which is the most effective time. The second study found that more than half of the women had an adequate blood folate levels (9). This would imply that there is a need for bread to be fortified so women who don't plan to get pregnant, have an adequate intake of folic acid before they do get pregnant.

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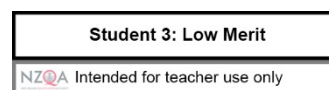
Dr Morreau, a paediatrician and chairman of child health at the Royal Australasian College of Physicians, said though folate occurred naturally in other foods, the average New Zealander's diet is deficient in the vitamin. Bread is cheaper than fruit and people are more likely to eat it. He believes adding folate to bread is "a good decision, endorsed by the World Health organisation, the result of 20 years research and is already done in 57 countries." Perhaps the best way forward is to ensure the healthier fortified breakfast cereals that are lower in fat, salt and sugar are subsidised to allow the more vulnerable people in our community, to purchase them more easily. For bread perhaps the cheaper loaves should be the breads that are fortified with folic acid as it is these breads that are more likely to be purchased by the lower socio economic sector and it is this group of people who are less likely to purchase folic acid supplements from the chemist due to cost. Surveys show that the lower the wealth of the community, the higher the prevalence of nutrient deficiency.(10) This is most likely due to a combination of a lack of money to buy healthy fresh food and a lack of education. If we were to hold the principles of benevolence and social benefit then we would want to help those in need, based on our value of wanting to help others.

6

(References 1 – 10 were listed).

	Grade Boundary: Low Merit
3.	<p>For Merit, the student needs to analyse, in depth a food related ethical dilemma for New Zealand society.</p> <p>This involves:</p> <ul style="list-style-type: none"> • exploring the underlying beliefs, values and practices associated with those holding contrasting viewpoints • explaining how these relate to the ethical dilemma. <p>This student has provided reasons for fortification supported by evidence (1). The contrasting viewpoints of different stakeholder groups are analysed with supporting evidence (2).</p> <p>The issue of developing a false sense of security is highlighted by the Government (3). The issue of fortified breakfast cereals that are high in sugar is explained, with reasons connected to marketing to children and the increase in obesity (4) (5). Reasons are provided that indicate why people of low socio-economic status may choose these fortified cereals (5).</p> <p>The underlying belief of a key stakeholder is explored with reference to the ethical principle of a 'common good approach' (6).</p> <p>The issue of synthetic folic acid versus natural folate is debated with supporting evidence (7) (8). A compromise of only fortifying some bread is suggested (9). However, this recommendation does not address the issue that only a limited quantity of folate is available from fortified bread.</p> <p>For a more secure Merit, the student could explore more underlying beliefs, values and practices, particularly those of the Health Professional Groups, supported with evidence.</p>

Folate is needed during pregnancy to reduce the risk of birth defects, anaemia, and neural tube defects. "Food standards Australia New Zealand estimates that the mandatory fortification of bread with folic acid will mean somewhere between 4 and 14 fewer neural tube defect-affected births annually in New Zealand." (1). The parents of a young girl born with spina bifida say they want to see folic acid fortification made mandatory. Wellington paediatric surgeon Brendon Bowkett said, "Not to do something that was straightforward and preventative, I think is a real tragedy." (2)



1

On the surface it seems like an easy decision to fortify bread however, there is research which suggests that the fortification of bread with folate could have as many bad results as it has good. "Two peer reviewed U.S studies have linked excessive folate to higher rates of prostate cancer in men and inflamed bowel disease in children." (3). There is also debate over how effective adding folate to bread will be, "Ministry advice is that woman will still need to take a folic acid supplement even with the mandatory addition of is it to bread." (4) This poses the question of whether it is fair to take away people's choice? Especially if adding folate to bread isn't going to be enough anyway and woman will still need to take supplements. Also if it isn't going to be effective then people who can't or won't buy supplements (low socio economic people) are still left without a solution.

2

The government also needs to be aware that if they make the fortification of bread with folate mandatory, there could be some women who think that by just having bread they will be having enough folate each day, and therefore feel they don't need to take supplements during their pregnancy. If the research above is correct, and eating bread won't be enough for woman to get the required amount of folate each day, then it could cause a bigger problem than there already is.

3

Another issue linked to fortification, is the fortification of high sugar breakfast cereals. A lot of the cereals that are fortified are aimed at and are popular with children. These cereals are usually fortified with nutrients such as Iron, Calcium, Niacin, Thiamin, Folate and Riboflavin etc. the problem is that most of these cereals are high in sugar, for example milo cereal has 34.1g per 100g of sugar, while the recommended amount is less than 15g per 100g, (5). Even though these cereals are high in sugar some parents with fussy children may buy them anyway because they think it's better for their children to start the day with breakfast even if it is high in sugar, rather than eating nothing if they don't like healthier cereals. Companies are marketing their products as healthy and parents are buying them thinking that they are buying the best cereal for their children and that the extra nutrients are going to help keep them healthy, what they need to remember is that too much sugar can lead to tooth decay and obesity.

4

Obesity is on the rise in New Zealand, "in 2006/2007, the age standardized obesity prevalence rate for the population aged 15 years and over was 25%. This is similar to the 2002/2003 rate of 24%, but a significant increase from the 1997 rate of 19%", (6). In New Zealand there is a scale used to describe the different socio economic status of people; with "Quintile 1" being the least deprived and "Quintile 5" being the most deprived. Statistics showed that people from Quintile 1 had lower rates of obesity with 27% of males being obese and 16.5% of females being obese. Quintile 5 showed higher rates of obesity with 33% of males being obese and 43% of females being obese. This may be because people

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of a lower socio economic status are less educated and therefore may think that these cereals are healthy because they are fortified with extra nutrients even though they are high in sugar. These statistics show that obesity in New Zealand is increasing at the same time as more and more high sugar breakfast cereals on our supermarket shelves.

Tooth decay is also something to be concerned about, with (7) reporting that "At the age of five almost half of our children have tooth decay." This is an unsettling statistic and should make us wonder whether it is right for companies to promote these cereals as healthy when it seems that they may contribute to so many problems. However a spokesperson from Sanitarium says, "We feel that food fortification is a method of improving the nutritional balance in the diet of consumers as it can restore nutrients to food products which may be lost during processing and is an important measure of minimizing the risk of nutrient deficiencies occurring among consumers." Sanitarium has taken the common good approach, "what is ethical and what advances the common good." They believe that fortifying their breakfast cereals is better for everyone and they are helping their customers to lead a healthier lifestyle.

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An article from livestrong.com suggests that synthetic vitamins and nutrients don't work as well in the body 'Vitamins produced in a lab do not have the exact same activity in your body as vitamins naturally occurring in food...If you take a synthetic vitamin, your body may require a higher concentration of it to receive the same amount as it would from a natural source.' If people need more of a fortified food to get the amount needed to meet their daily requirements, then isn't it false advertising from the companies to say that people can get their daily dose of a nutrient from eating their products; it is also extra money people are paying to have fortified cereal rather than plain cereal.

7

On the other hand an article from the Ministry of Health claims that, "folic acid refers to pteroylmonoglutamic acid and it is the synthetic (man-made) form of folate. Folic acid is used in dietary supplements fortified food and beverages. It is more bio-available (more readily absorbed and used in the body and stable, than naturally occurring food folate." This means they believe that synthetic vitamins and fortified foods are better for a person than natural source in the case of folic acid in bread.

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This is a big argument and a way forward could be to give people more of a choice, perhaps companies could fortify only some of their products. Only cheaper loaves of bread (eg; budget) could be fortified which would help people from a lower socio economic status as they are the people who don't or can't afford to buy supplements. Fortifying cheaper loaves of bread could also be more beneficial to people of a low socio economic status because they may also be the people who don't pay for or use contraception which could therefore lead to more unplanned pregnancies, if folate was in cheaper loaves of bread which they are more likely to eat then they could be getting some of their folate from bread before they find out they are pregnant, which is what is recommended. This could also be the same with cereals, if companies are so concerned with fortifying to make foods healthier, then they could fortify the cereals that are low in sugar, this would mean if parents were buying cereals based on thinking fortification is healthy they wouldn't be overloading their children with sugar which could cause obesity and tooth decay.

9

(References 1 – 7 were listed).

	Grade Boundary: High Achieved
4.	<p>For Achieved, the student needs to analyse a food related ethical dilemma for New Zealand society.</p> <p>This involves:</p> <ul style="list-style-type: none"> • explaining the nature of the ethical dilemma and the contrasting viewpoints associated with it • explaining how the ethical dilemma may affect New Zealand society. <p>This student has explained the nature of the dilemma of the fortification of food (1), along with a detailed explanation of the effects of folate deficiency (4). The issue of fortifying breakfast cereals which are marketed to children is raised and connections made to obesity (2).</p> <p>The supportive viewpoints of the Health Professionals and parents (particularly those affected by the deficiency) are briefly explained (5) (7). Benefits for the group most directly affected, people of lower socio economics status, are described (7).</p> <p>Opposing viewpoints include an explanation and questioning of possible connections to cancer (8). The issues of developing a false sense of security and insufficient folate from daily bread intake is also raised (9).</p> <p>Brief connections are made to the underlying ethical principles of a 'common good approach' (3) for a key stakeholder and the 'rights approach' (10) for people opposing the dilemma.</p> <p>To reach Merit, the student could explore more of the underlying beliefs, values and practices associated with those holding contrasting viewpoints.</p>

Student 4: High Achieved

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The fortification of food means the addition of vitamins and minerals to it at some stage during the processing. This can take the form of these nutrients being added because during the processing of the food a substantial amount of the original nutrient has been stripped from the food, as in Folate from flour; or the addition of new nutrients that were never in the food in the first place or in negligible amounts, as in iodine in salt. The dilemma is whether breakfast cereals and bread should be fortified or not. The reason why foods are fortified is to increase the population's intake of nutrients but is this causing the population to "mass medicate" unnecessarily?

1

Examples of common cereals popular with children are coco pops, milo cereal, nutrigrain and weetbix. These cereals have been fortified with a variety of nutrients such as B vitamins, folate, protein and calcium which are important nutrients for growing children. These cereals contain a high amount of sugar and this is making these breakfast cereals unhealthy. For example nutrigrain contains 32.0 per 100g when a recommended cereal should have less than 15g per 100g (Healthy Food Guide, Sept, 2009), which proves that most cereals are far too sugary and are not meeting the requirements for a healthy breakfast cereal. The packaging and advertising of these products such as nutrigrain puts into people's heads that they are going to "become an iron man." This means that unhealthy cereals such as milo cereal and coco pops are being portrayed as being healthy which makes parents think these are a good option to buy for their kids. Is it ethical to promote a breakfast cereal as being healthy and full of nutrients and when it is so high in sugar particularly as it could be contributing to tooth decay and obesity for children in the future if they continue to eat these cereals? Obesity is continuing to contribute to increase, (1997 17% adult males and 20.6% adult females were obese in 2008/9. These figures increased from 27.7% for females. ("A focus on nutrition: key findings from the 2008/9 NZ adult nutrition survey")

2

Sanitarium has taken the "common good approach" to ethics and believes by fortifying nutrients into their cereals, they are able to help make people healthier. This may be true if this is the only way some people are going to get most of their nutrients. They may lack fruit and vegetables but at least they are getting some nutrients from their cereal.

3

In New Zealand the proposed fortification of folic acid being added to bread has a clear divided line between the positives and negatives of adding this to bread. (Folate is an essential B Vitamin and is found naturally in leafy vegetables, citrus fruits, wholemeal bread, yeast, liver and legumes. Folic acid is the synthetic form of folate. It is more bioavailable (more readily absorbed and used by the body) and stable, than naturally occurring food folate. It is important for cell growth and reproduction. Folate deficiency can result in a type of anaemia called "megaloblastic anaemia" which is a blood disorder which causes enlarged and immature and dysfunctional red blood cells. It is essential for everyone to get adequate supplies of folate not just pregnant women. It helps to ensure healthy development of babies in early pregnancy. In 1999 it was found that a daily dose of 400µg of folic acid alone resulted in a reduction in NTD (neural tube defects) risk when taken at least one month before conception and for 12 weeks after conceiving. NTD are when the brain, spinal cord or the covering of these organs has not developed properly. Spina bifida is the most common NTD. Children with spina bifida can have varying degrees of paralysis of their lower limbs.)

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Some doctors believe that this will be a positive thing to add folic acid to bread as it will cut down on the incidence of spina bifida by about 80% and total birth defects by 40%.

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Paediatricians are very much for the addition of folic acid in bread. Dr Morreau, chairman of child health at the Royal Australasian College of Physicians, said though folate occurred naturally in other foods, the average New Zealander's diet is deficient in the vitamin. Bread is cheaper than fruit and people are more likely to eat it. He believes adding folate to bread is "a good decision, endorsed by the World Health organisation, the result of 20 years research and is already done in 57 countries."

The people who are most affected by this dilemma are from the low socio-economic sector of society. Because they don't have much money, they are not able to afford more expensive healthy food like fresh fruit and vegetables which contain important levels of folate but will benefit from eating bread fortified with folic acid.

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Some parents have also come out and said that they want folic acid added to bread, particularly parents who have had babies with spina bifida. It causes a lot of stress and financial pressures on families and society, to have a baby with this condition. "Surgery alone can cost nearly 1 million dollars per child". (The young face of the folate debate- The Dominion Post. 9/11/ 2010) A family said that if folic acid is added to bread it will greatly reduce neural tube defects and they said "caring for her was a challenge and he wanted to see folic acid fortification made mandatory." Food Standards Australia and New Zealand estimate the addition of folic acid to bread will reduce NTD related pregnancies by 4 -14 per year. ("The addition of folic acid and iodised salt to bread", NZFSA, 18 September, 2009) In 2004, 16 babies were born with spina bifida and 29 pregnancies were terminated after scans showed the condition. ("Folic acid holdup frustrates doctors" by Ruth Hill, 21 July, 2009, The Dominion Post) Another article quoted that as many as 70-75 neural tube defect-affected pregnancies occur in New Zealand each year. ("Folate Fortification of Bread Back on the Table", by Michael Daley, 23 May, 2012, Fairfax NZ News)

7

Some research suggests that folic acid leads to prostate cancer in men and inflammatory bowel disease in children. There is also a concern that it might mask low levels of vitamin B12 in elderly people which could lead to neurological damage. (Editorial – "Spare us our daily folate" – 16/7/2009). Otago University professor Murray Skeaff has said that research has been done but not yet published that shows there has been no significant increase or decrease in cancer rates between those taking folic acid and those who were not. ("Folic acid findings muddy waters, 14/7/2009 by Martin Key)

8

The president of the Bakers Association, Laurie Powell is against the immediate addition of folic acid to all bread as women would still have to take supplements to reach the recommended 800µg/day to prevent Neural Tube Defects in their unborn children, but he was afraid that because the women knew the bread contained folic acid they may not think that they would need to take the supplements anymore ("Folic acid may go into half of NZ bread" – Tracy Watkins The Dominion Post, 2009). (It is expected that the compulsory addition of folic acid to bread will still only supply 140µg a day, as most women only have 1.5 slices of bread per day (Editorial: Spare us our daily folate – The Dominion Post 2009)).

9

The main reason people object to the addition of folic acid to bread is the fact that it is taking away an individual's choice. These people have taken the "rights approach" to ethics where "Each person has a fundamental right to be respected and treated as a free, equal and rational person who is capable of making his or her own decisions." ("Health Education in the NZ Curriculum", compiled by Jenny Robertson and Rachel Dixon, January, 2012).

10

	Grade Boundary: Low Achieved
5.	<p>For Achieved, the student needs to analyse a food related ethical dilemma for New Zealand society.</p> <p>This involves:</p> <ul style="list-style-type: none"> • explaining the nature of the ethical dilemma and the contrasting viewpoints associated with it • explaining how the ethical dilemma may affect New Zealand society. <p>This student has briefly explained the nature of the dilemma of the fortification of food (1), along with examples of breakfast cereals that have been fortified (2). The issues of the high sugar content and possible links to obesity are raised and connections made to the group most directly affected, i.e. people with a lower socio economics status (2).</p> <p>Some reasons to support contrasting viewpoints on the fortification of bread with folic acid are provided (4). Some suggestions are provided of alternative sources of this nutrient (5). Safety concerns are briefly explained (6). The issue of whether bread would provide sufficient folate is raised supported with evidence (7).</p> <p>The question of how ethical it is to fortify food is stated (3) (8). A compromise is suggested which may help the lower socio-economic group (9).</p> <p>For a more secure Achieved, the student could explain the nature of the dilemma of fortification in more detail and explore more contrasting viewpoints supported with evidence.</p>

Fortification of food means to add important vitamins and minerals to it at some stage during the processing. Foods lose a lot of their original nutrients during the processing so some nutrients are added to replace what the food has lost, or are added when they were never in the food in the first place. Foods are generally fortified to increase society's intake of important minerals and vitamins; this will help prevent many health problems that can occur as a result of certain nutritional deficiencies. Iodine was added to salt in the 1940's to help prevent goitre in New Zealanders with great success.

1

It is well known and documented that breakfast is the most important meal of the day. Eating breakfast each day helps give you all the necessary nutrients needed to help maintain good weight control and concentration in school or work. Generally by eating breakfast people consume more fibre, have higher levels of vitamins and minerals including iron, calcium and magnesium. Breakfast foods usually contain lower levels of fat although this needs to be balanced against the increased number of breakfast cereals that contain too much sugar and highly processed grains that have had their good nutrients removed because of processing (1). Many of today's widely advertised breakfast cereals including milo cereal which has 27.2g of sugar, 120mg of sodium and 1.5g of saturated fat, bugs n' mud has 38g of sugar, 190mg of sodium and 4g saturated fat and Nutrigrain which has 32.0g sugar, 560mg sodium and 0.1g saturated fat are fortified with vitamins and minerals such as calcium, iron, B vitamins like niacin, thiamine, riboflavin and folate. While the advertising appeals to young children, mothers are pressured into buying these by their children. It is however not widely advertised that many of these cereals have excessively high amounts of sugar, sodium, saturated fat and also low fibre. Healthy food guide recommended that you have less than 15g sugar per 100g, less than 400mg sodium per 100g, less than 3g of saturated fat per 100g and more than 5g of fibre per 100g. The low socio-economic section of society is mostly affected by this dilemma as they are often under educated and are more easily influenced by advertising and give into pester power, parents want to give their children something that is seen as normal by the rest of society. The effects this can have on the low socio-economic families is that if they have excessive sugar intake could lead to tooth decay or obesity. However, if they do eat fortified breakfast cereals they may be less likely to get bowel disease and may get essential nutrients they wouldn't get otherwise to live a healthy lifestyles.

2

Is it the government's right to force folate into breads and cereals for the whole population when possibly it is just a percentage of the population that are missing the required nutrients?

3

Studies have proved that an increase of folic acid and iodine is needed by pregnant woman, by having these nutrients the risks of spina bifida is reduced, by re adding folate which was removed from wheat during milling would cut the incidence of spina bifida which is the most common type of neural tube defect (NTD) by about 80 % and total birth defects by 40% (2). Wellington paediatric surgeon Brendon Bowkett stated in the Dominion Post on 09/11/2010 "Not fortifying bread was pure neglect and not to do something that was straight forward and preventative, I think is a real tragedy." Iodine is also an essential nutrient required in small amounts for normal growth and brain development in unborn babies and infants.

4

There are other ways to increase your intake of essential nutrients. For example important sources of iodine are found in foods such as seafood, milk and eggs. Folate is found in fresh, raw or lightly cooked leafy green vegetable such as broccoli and spinach, fruits and

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juices such as orange juice, dried beans and peas. (3). Is it being suggested that we would be just as well eating fortified bread instead of fresh fruit and vegetables?

The addition of folate has raised safety concerns. Two peer-reviewed US studies have linked excessive folate to higher rates of prostate cancer in men and inflammatory bowel disease in children. In elderly people high levels of folic acid may hide low levels of vitamin B12, this may lead to brain damage. (4). However Otago University professor of human nutrition Murray Skeaff said unpublished research shows “No significant increase or decrease in cancer rates between people taking folic acid and those who were not.” This finding is based on studies involving 35,000 people in several countries since the mid 1990’s.

6

The addition of folic acid to bread is expected to provide only 140mcg a day. However the Ministry of Health website reports on dietary studies by the University of Otago suggest the daily intake for pregnant women is 600mcg and for breastfeeding women 500mcg. This indicates women will still need to take a supplement. The president of the Bakers Association Laurie Powell has said he is against the addition of folic acid to bread as women will stop taking the supplements as they think that just having the bread will be enough. Actually they will only get about 140µg which is the average of 1.5 slices of bread women usually eat each day. 800µg is needed each day to prevent unborn children getting Neural tube defects. (5). So women will still need to take a supplement to reach this level, but will they know that? Adding folic acid to bread will help low socio-economic groups because they may be less likely to use contraception and are therefore more likely to have unplanned pregnancy or take supplements.

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Ursula Arens, spokes woman for the British Dietetic Association has been quoted in The Independent 03/02/2012 saying “Food fortification is as much about ethics and society as science. While traditionally staple foods such as flour, cereals and spreads have been seen as good vehicles for added nutrients as such a large proportion of the population regularly eat them, the question remains- is mass medication through the food we eat the way to go?”

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A possible way forward could be to add folic acid to low cost breads only. This would help low socio economic families in particular because they are the ones less likely to take folic acid supplements and are more likely to have unplanned pregnancies. This would also mean people could choose to select this fortified bread or not.

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(References 1 – 5 were listed).

	Grade Boundary: High Not Achieved
6.	<p>For Achieved, the student needs to analyse a food related ethical dilemma for New Zealand society.</p> <p>This involves:</p> <ul style="list-style-type: none"> • explaining the nature of the ethical dilemma and the contrasting viewpoints associated with it • explaining how the ethical dilemma may affect New Zealand society. <p>This student has briefly explained the nature of the dilemma of the fortification of food (1). The viewpoint of a key stakeholder is provided (2) to support fortification of breakfast cereals. An explanation is provided of how fortified breakfast cereals are promoted to children and connections are made with increased obesity (1) (2).</p> <p>The contrasting viewpoints of fortification of folic acid are briefly stated. Supporting viewpoints of doctors and parents associated with pregnancy (5) are provided.</p> <p>Some explanation is provided for the opposing viewpoints showing why fortification should not be considered (3) (4). A compromise is suggested (6) (7).</p> <p>To reach Achieved, the student could explain the dilemma of fortification in more depth - women need folate before they know they are pregnant. More evidence could be included to support the contrasting viewpoints.</p>

The dilemma is whether or not to fortify breakfast cereal and breads in New Zealand with vitamins and minerals. Companies who produce breakfast cereals believe vitamins and minerals are lost by stripping the original nutrients during the processing and making of the cereals, so adding the original nutrients or something that never existed in the first place companies believe it is acceptable. The main reason for fortification is to replace the important nutrients that may have been lost in the processing of the cereals, but are the manufactures portraying the wrong cereals to be healthy for all consumers? Breakfast is the most important meal of the day. Having a healthy, nutritious and balanced meal in the morning is important for development and concentration for the day ahead. The recommended intake of sugar per 100 grams is less than 15 grams and less than 25g with dried fruit.(1). Nutrigrain nutritional information shows that there is 35.5grams of sugar per 100 grams of the cereal. Cereals like these are being fortified with nutrients such as calcium, b vitamins, protein. These cereals are being portrayed as healthy and good for children who are wanting to succeed and become athletic like it is portraying on the packaging and advertising campaign “become an iron man”, “ this is the cereal that’s good for you and helps you to become big and strong like an iron man”. This implies that cereals like milo cereal and co-co pops are healthy for parents and their children because of the added nutrients in them, when technically they are getting more bad than good. The extra sugars can unfortunately lead to tooth decay and obesity later on in life for children who are unaware of the real effects these sugary cereals are having.

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At a time when obesity is continuing to increase; 1997 17% Adult males and 20.6% Adult females were obese. In 2008/09 these figures increased from 27.7% for males and 27.8% for females”. (2), is it right that these companies are supplying children with high sugar breakfast cereals and portraying them to be healthy and nutritious? Sanitarium feels so, as they believe “food fortification is the method of improving the nutritional balance that may be lost in the stripping and producing of these foods, our aim is to help prevent nutrient deficiencies amongst customers.” (3)

2

New Zealand has a range of differing opinions when it comes to fortification of folic acid in NZ breads being sold around the country, a range of negative and positive views on this opinion.

Some negatives include the link between folic acid and cancer. Claims ‘ Folic acid findings muddy waters, by Martin Kay,2009 (4)’ recent information dilutes claims of a link between folic acid and cancer, but it comes up as a problem and hopes to scrap the decision to add folic acid to all of New Zealand’s breads we consume because of the risk it portrays for the consumers of New Zealand, ‘the government is under increasing pressure to back out of a 2007 trans-Tasman food standard that requires bakers to add folic acid to most bread ,following concerns of a cancer link’ this shows the true concerns in adding the folate to all/most of New Zealand’s breads.

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Bakers also have a deciding factor towards adding the folic acid to bread. It slows down the time they have to make the food; it causes the bakers to do extra steps in order to add the folic acid into all of New Zealand’s breads. When bread is such a popular and demanding industry to create the stock, bakers may not have the extra time and patience to get the

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stock out to the very important demands of the food industry. This causes strain and havoc for the bakers and their very and important jobs.

On the other hand adding folic acid to bread is nothing but mandatory for a number of parents and consumers of New Zealand's breads. Adding folic acid to breads that are sold here is nothing but seriously important to a significant amount of people including doctors and parents around New Zealand's health services. Adding folic acid to breads around NZ is important because the folic acid lowers the chance of babies being born with spina bifida. 2004 studies show that 16 babies were born with spina bifida and 29 pregnancies were terminated after scans showed the condition, this was a growing factor in NZ, (5). It frustrates doctors to know the simple thought of eating foods with added folic acid can help to reduce the chance that babies in NZ will be born with this condition. It was also estimated in 1997 that each child born with the condition costs the health system \$400,000; this creates problems with the health services because if there are other options to reducing the amount of children who have this condition surely they would try to help the parents who can't afford the fresh produce and expensive tablets? Unfortunately the differing opinions create strain for the doctors helping to keep babies healthy.

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Sometimes parents may not be aware they are pregnant and by the time they do their babies vital organs are already forming and spina bifida may be continuing to develop in the baby's body, so adding folic acid to breads would be a sensible option to reduce the chances for gathering the condition by 80% and of total birth defects by 40%.

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I feel that both opinions on fortification of breakfast cereals and bread, have very reasonable arguments either side. I understand that a child getting the extra sugars in the morning is unneeded and shouldn't be encouraged on a daily basis with the advertisements and slogans which make the parents think they are giving their children a healthy start to the day but can unfortunately lead to tooth decay and obesity later on in life.

And having extra folic acid in your diet when thinking about or are pregnant to reduce the risks your child could be born with the awful condition of spina bifida, less children being born with this condition saves the health system \$400,000 per child and having a healthy happy baby is the most important factor for a parent.

I think that adding folic acid to all of New Zealand's breads is a demanding idea and puts a lot of strain on the industry with the clear dividing lines between the decisions for fortification to bread. Having a selection of breads that are fortified with folic acid will help to prevent the difficulties in whether or not to fortify. Having a choice for customers to choose whether or not to consume the fortified breads will leave everyone happy and no deciding factors.

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(References 1 – 5 were listed).