# FOOD STUDIES

**Paper 9336/01**
**Theory**

## Key Messages

The importance of reading questions carefully cannot be stressed enough. Sometimes candidates missed the key word in the question and wasted time including information in their answers that was irrelevant. An example of this was in **Question 2** where candidates discussed digestion from the time the food was ingested. There was no credit available for digestion in the mouth or in the stomach. Candidates should be prepared to re-read the questions as they plan their responses.

Candidates need to take more notice of the credit allocation in each question.

## General Comments

All questions were attempted, with **Questions 1**, **4**, **5** and **8** being the most popular. **Question 2** was the least popular.

## Comments on specific questions

***Section A***

**Question 1**

**(a) – (e)** Many candidates were able to give good accounts for each deficiency disease and were particularly knowledgeable about anaemia and night-blindness. A common misconception was that night-blindness is the inability to see at night, rather than that vision is impaired in dim light whatever time of day. Very few candidates were able to correctly explain that osteoporosis is a *loss* of calcium from the bones, rather than a *lack* of calcium in the diet, although there was good knowledge about this being a disease that mostly affects women after the menopause due to hormonal changes. Not many candidates gave a good account of goitre, most giving vague responses about a large lump forming in the neck. Candidates are expected to know the detail about the enlargement of the thyroid gland and reduced production of thyroxin due to a lack of iodine. Many candidates thought that goitre was due to a lack of salt, perhaps confusing the need for iodised salt as a remedy.

**Question 2**

**(a)** There were some good responses about the digestion of food in the duodenum and ileum, though few candidates made clear distinctions about whether they were discussing the duodenum or the ileum, leaving Examiners uncertain of the candidate's accurate knowledge. Most candidates were able to explain that trypsinogen becomes trypsin in the duodenum, though few were able to say that this change is activated by enterokinase. Most candidates had a good knowledge of bile and its purpose, and of amylase, but very few made reference to the pancreatic juice that is particular to the duodenum. In the ileum, candidates were able to explain that amino acids are formed from peptides and that lipase completes the breakdown of fat into fatty acid and glycerol. Candidates were knowledgeable about maltase, lactase and invertase, but few made reference to the intestinal juice that is particular to the ileum.

**(b)** The responses to this part of the question were often repetitive and muddled. Some candidates correctly explained that amino acids are absorbed through the microvilli into the blood capillaries, but few made reference to active transport. There was a poor understanding of fat digestion, and throughout this question candidates repeated the same points about the villi, the liver and the

hepatic portal vein. Credit was available for points about the absorption of minerals and vitamins, but few candidates touched upon this.

**Question 3**

**(a)** In this question there were few balanced answers; most concentrated on either the uses of fats and oils or the characteristics of fats and oils. Those candidates who discussed both in detail found it easy to get most or all of the available credit. A good number of candidates showed detailed knowledge of the difference between saturated and unsaturated fats, many of them drawing diagrams for clarification, for which credit was awarded. Candidates seemed knowledgeable about the plasticity and the creaming power of fats. Little was said about the range of melting points. There were some vague responses about the uses of fats, often mentioning pastry making and cake making with no explanation of which fat is best to use and why.

**(b) (i)** Some parts of this question were answered well. Candidates knew that rancidity is spoilage of fats and oils, resulting in an unpleasant odour and flavour. They were also aware that rancidity is accelerated by heat, light and metals. Few were able to explain that the changes in odour and flavour are brought about by the formation of aldehydes and ketones and there was only occasional mention of lipase hydrolysing fats into glycerol and fatty acids.

**(ii)** Candidates referred to decomposition, an acrid smell, production of acrolin and ignition when discussing smoke point. There was only occasional mention of the smoke point influencing the choice of fat for deep fat frying.

**(iii)** The main point of understanding about hydrogenation was that it is used in the manufacture of margarines.

**(c)** A common mistake in this question was for candidates to discuss how fat can be reduced in the diet rather than why it should be reduced.

**Question 4**

**(a)** Most of the candidates who chose to answer this question were well informed. Most knew that the primary structure of protein is a sequence of amino acids combined through their amino and carboxyl groups to form peptide bonds. The elimination of water in a condensation reaction was well known, and that protein is folded to form an alpha helix spiral or beta pleated sheet was also known information. What candidates were less certain about was that there are 22 amino acids that can be combined into polypeptide chains that contain hundreds or thousands of amino acids giving many different proteins.

**(b)** There were some inaccuracies in the answering of this question. Many candidates stated that all globular proteins are soluble in water but this is not correct as globulins are insoluble. Many also stated that all fibrous proteins are elastic, but collagen is inelastic. A good number of candidates gave keratin as an example of a fibrous protein. This is not inaccurate but it is not a relevant example for a Food Studies paper.

**(c)** This part of the question was reasonably well answered. Most candidates said that the effect of heat on proteins was denaturation and coagulation. Candidates gave custard and egg whites as examples. Foams, the unfolding of globular proteins and the whisking of egg white to trap air in a meringue were good comments that were made when discussing the effects of agitation on proteins. Candidates also knew that acids such as lemon juice and vinegar can be used to tenderize meat by softening protein.

**(d)** There was evidence that candidates knew the process of *deamination* well. The point about deaminated molecules being converted to pyruvic acid was well known.

***Section B***

**Question 5**

**(a)** This question was a popular choice with candidates. There was a tendency for repetition, and this question showed the least thought to the planning of a coherent response. Candidates' responses included references to many different valid points including the type of land available, the climate, droughts, the seasonal changes, staple foods, importation of foods and personal preferences or beliefs relating to religion and culture. Many responses showed extensive knowledge of social issues. Some of the best answers were written over two pages, whereas some of the least good responses spanned four or five pages.

**(b)** A good number of candidates were able to say that RDI makes reference to nutrient intake, that it is an estimate and aims to achieve healthy living. Candidates also knew that RDI differs between individuals, according to a number of differing factors. A good number of candidates laboured this last point and wrote a whole page of notes referencing different types of people and their estimated RDI, perhaps not having noted the credit allocation for the question.

**(c)** Although many candidates gave a list of all the information that could be found on packaging, they often only gave nutrients a brief mention. There was also discussion of allergies to nuts in many responses, but nuts are a food and not a nutrient.

**Question 6**

**(a)** A good range of reasons for using sauces was required, with a different sauce example or valid point for each. Many candidates repeatedly mentioned the same point. Most frequently the responses given were "to give colour" and "to make attractive", with macaroni cheese being used as the main food example. Those candidates who responded by saying "to make a skilful dish" may have been thinking of why they use sauces when making food for their coursework.

**(b) (i)** There were some good explanations of gelatinisation, with many candidates mentioning starch, moist heat, softening, swelling, correct temperatures and viscosity. Fewer candidates explained that a sol is formed which cools to form a gel.

**(ii)** There were some good explanations of emulsification with many candidates mentioning oil in water and water in oil with correct examples, hydrophobic, hydrophilic and lecithin as an emulsifier.

**(iii)** Many candidates were able to explain that protein denatures when heated or when an acid is added, and that this process is irreversible.

**(c)** Many candidates did not attempt this question. Those who did were able to explain the leaking of water from a food product.

**Question 7**

**(a)** In this question candidates concentrated on the growth of bacteria being a factor which makes food dangerous to consume. Whilst correct, the answer required an extensive amount of other factors that can contribute to making foods dangerous to consume. Many candidates who included a lot of detail about how bacteria reproduces and in what conditions, omitted to discuss chemicals, insecticides, polluted water, poisonous metals, blown cans and other contaminants.

**(b) (i)** Most candidates stated that it is important to make sure that all the ice has melted, because otherwise the chicken would not be cooked in the middle and bacteria would not be killed. Very few candidates added anything else of relevance to their answers.

**(ii)** Most candidates stated that bacteria need to be killed. Many discussed the merits of cooking the chicken to soften the meat and make it tender.

**(iii)** Candidates stated that bacteria would multiply, but few were able to extend their answer and say what the consequences of this would be to the person who ate the food, or in what timescale the food would become dangerous to eat.

**(c) (i)** Candidates were able to say that bacteria are dormant in a freezer. Few gave an accurate temperature of –18 °C. There was occasional reference made to the formation of ice crystals although there was some confusion about the size of the crystals and the need to freeze rapidly.

**(ii)** It was clear that many candidates confused a freezer with a refrigerator. The best answers include points about wrapping, sealing, stock rotation, checking dates, portioning before freezing, keeping the freezer clean and defrosting periodically. Very few candidates made points about freezer burn or explained why they had suggested wrapping and sealing the foods.

**Question 8**

**(a)** This was a very well answered question. Many candidates were able to discuss the nutritive value of milk in excellent and accurate detail.

**(b)** Many candidates mentioned a lack of iron and Vitamin C. There was discussion of problems relating to older people, e.g. fat will cause CHD and too much sugar will cause obesity.

**(c)** Some of the responses were excellent, with detailed pros and cons. Others needed to develop more balanced arguments with less repetition in order to gain full credit.

# FOOD STUDIES

**Paper 9336/02**

**Practical**

## Key Messages

- It is important that pages are assembled in the correct order; to assist with this, each carbonised sheet has a page number printed on it. It is the responsibility of each candidate to ensure that their own pages are in order before the scripts are handed in.
- Teachers who undertake the marking of the Practical Test are reminded that the mark scheme published by CIE must be followed accurately. Reference must be made to the list of dishes planned on page 1 of the Preparation Sheets.
- It is helpful if candidates state the reason why they have chosen a particular dish. If a dish lacks skill, the maximum credit available for that dish must be reduced. Likewise, if a skill is repeated in other dishes, the maximum credit must be reduced on the second and any subsequent occasions. Left over credit cannot be transferred to other dishes.
- Before the Practical Test, the Examiner must prepare an Individual Mark Sheet for each candidate. The maximum credit available for each dish, together with the actual credit awarded, must be clearly indicated on the Individual Mark Sheet.
- Detailed comments must be written to justify the credit awarded; it is not sufficient to use single words to describe results, e.g. 'satisfactory' or 'good'. Reference should be made to the colour, flavour and texture of dishes and also to consistency, if appropriate.
- No credit should be awarded for any dish planned but not served; the lost credit cannot be transferred to other dishes. Any dish prepared but which is not on the original plan made under examination conditions cannot be credited.
- It is important that Examiners give as much information as possible on each candidate's Method of Work in order to justify the credit awarded. Candidates who demonstrate few skills cannot score well for the method.
- If a dish is inedible because it is undercooked or overcooked, no credit should be given.

## General Comments

The quality of the written answers was generally good. Scripts were set out clearly and candidates seemed to have had sufficient time to complete all sections of the paper.

Some candidates chose dishes that were inappropriate or were not sufficiently skilful for an Advanced Level Practical Test. Credit for each dish should be awarded according to the degree of skill demonstrated. It is rare for any dish to be worth full credit, and so Examiners should not award full credit without careful consideration. It may be that none of the candidates in a Centre will have their dishes marked out of the maximum possible credit. Discretion and professional judgement must be used by teachers to ensure that the maximum credit for each candidate fairly reflects the complexity, or otherwise, of the dish.

It is inappropriate to make one statement to cover all the dishes made by a candidate, as this does not consider the merits, or otherwise, of individual dishes. Sometimes the credit awarded seemed to be too high when comments suggested that there were many negative points to be taken into account.

Occasionally local Examiners made comments on the choices and marked the Order of Work and the written answers; as stated in the Instructions to Centres, all the work carried out in the Preparation Session is marked externally.

Time plans were generally well done, with clear instructions on methods, cooking times and temperatures and, in most cases, the method of serving. Details about garnishes and decorations were given in the better plans. Most candidates listed an appropriate amount of work to be carried out in the half-hour preparation time before the start of the Practical Test, although they should be reminded that they must not include any processes that are part of the preparation of dishes such as preparing puff pastry, whisking egg whites, creaming mixtures and dissolving gelatine. Some time plans contained too much detail, giving precise information for every stage of preparation.

Some candidates did not allow sufficient time for cooling a dish before decorating, or serving cold, having left the preparation too late. Often too much work was left to be done in the last half-hour of the test which allowed no time for 'over-running' during the earlier part of the test; as a result some dishes may not have been properly cooked or served. Some candidates listed all stages of each dish, one after the other rather than dove-tailing the preparation stages of different dishes. All plans should include at least two sessions of washing up the test and a time for washing up given at the end of the test. Some candidates indicated how long it would take to make a dish, e.g. 10 minutes to make cake by creaming method, 5 minutes to make a roux sauce, rather than making an accurate time plan, and others omitted to give the oven temperature and cooking times for each dish.

Many candidates omitted to give practical reasons for their choice of dishes, instead making comments about the type of meal for which the dish would be suitable or suggesting suitable accompaniments for the dish. Where ingredients for a dish were easily available, low priced, seasonal or garden produce this should have been mentioned with an example of the food given in each case. Likewise if a dish could be cooked and served in the same dish, (thus saving washing up time), or would be served cold and did not require the use of an oven, or demonstrated the use of labour-saving equipment.

Candidates could also have stated why they had chosen their dishes, e.g. for the question on sugar they could have said that they chose to make a yeast mixture because sugar is needed for the activation of yeast, etc. In **Question 1** candidates could have stated that they were making a cake because it demonstrated baking, and in **Question 3** a fruit flan could have been made using strawberries and kiwi fruits for colour. There were numerous possible practical reasons why particular dishes could be included in a Practical Test and every point made was carefully considered. Discussions of possible variations or mention that a dish could be made in advance and frozen for future use or could be used for a birthday party or taken on a picnic were inappropriate.

Candidates were asked to comment on the nutritional value of the dish chosen in part **(b)** of each question. Some answers, however, related to all the dishes chosen. There were some excellent accounts but also a number of vague responses; precise information is required at Advanced Level. It is expected that candidates will note, for example, that egg contains fat, which is a source of energy, or that HBV protein, which is important for growth, is obtained from milk. Nutrients must be linked to ingredients and to functions. Simply stating that the dish contains iron or particular vitamins and minerals is not sufficient unless functions are stated.

## Comments on Specific Questions

### Question 1

**(a)** It was not always obvious which methods of cooking were being used and many candidates relied heavily on baking. Some candidates chose to fry foods, but this often entailed stir-frying which is not really skilful enough at this level. Use of a microwave, a pressure cooker or steaming to make a sponge pudding was seen, and some candidates used a grill to brown the cheese topping on a lasagne.

**(b)** Many candidates mentioned that the meat may be tough due to the age of the animal, connective tissue and well-used muscles. There were some very good suggestions for ways in which the meat could be tenderised including pounding, marinating and the use of enzymes. Some candidates, however, mentioned different methods of cooking, although the question was about tenderising before cooking.

For the changes that take place, most candidates mentioned protein coagulating, collagen changing to gelatine, meat tenderising and change of colour.

**Question 2**

**(a)** Again it was not always obvious why candidates had chosen their dishes; most mentioned that sugar is needed for the activation of yeast dough, some mentioned flavour, aeration and caramelisation.

**(b)** Most candidates suggested not adding sugar to beverages, avoiding sugar coated cereals, reading labels and cutting down on sweets, cakes, etc. The majority gave three problems and were able to discuss them in reasonable detail.

**Question 3**

**(a)** Candidates used fruit, vegetables, chocolate, herbs and spices to give colour and often indicated this in the answer. Some relied too heavily on fruit. Credit was also awarded for dextrinisation, Maillard reaction and caramelisation.

**(b)** Most candidates gave four different examples but some candidates named four different fruits or vegetables, etc.

The advantages suggested included replacing colour lost in processing and making the food look more attractive. For disadvantages, answers focused on allergies and effects on health. Many candidates, however, discussed additives in general and did not focus on colourings.

There were some very good responses to the ways in which heat changes food colour, with most candidates mentioning dextrinisation, caramelisation and Maillard reaction.

Part **(b)** of the question specifically stipulated that the dish must be skilful. Credit was sometimes lost because the dish chosen was too simple. Many candidates made a yeast mixture, a gelatine dish, choux pastry, flaky or puff pastry. Lasagne or stuffed pancakes with a cheese sauce topping for the calcium dish were made by many in answer to all of the questions. In most cases the dishes could be made to fit the criteria in each case.

# FOOD STUDIES

**Paper 9336/03**
**Unsupervised Work**

## Key Messages

The aims and objectives of the Coursework Investigation are clearly set out in ***Section 6*** of the syllabus which gives useful information on the criteria used to award marks. It is strongly advised that each candidate is provided with a copy of the relevant pages to use as a check list on the amount of detail required at each stage during the process of their investigation. Candidates are disadvantaged if they are unaware of the parameters required of the study.

Candidates should be advised that it is not necessary to print each page on card, to stick written pages onto card or to decorate pages with irrelevant pictures or embellishments. This not only makes handling of the work more difficult but is time wasting and does not gain any marks.

## General Comments

As in previous years a high proportion of the coursework investigations were well presented, logically organised, interesting and informative. There were many impressive and varied titles showing originality of thought and freshness of ideas. Overall the general quality of the work had improved.

It was apparent that most of the candidates' studies were valuable pieces of work produced as a result of a high level of commitment to their chosen topic. More successful candidates followed the framework set out in the syllabus with well outlined parameters and clear boundaries.

There were, however, a few individual studies which showed little evidence of any investigative skills and conclusions were drawn for which there was no evidence.

Some candidates had simply produced projects which did not relate to the syllabus and consisted merely of information from books or web pages.

Occasionally, topics were chosen which did not lend themselves well to a study of this nature. It is important that titles are carefully considered. A work entitled 'The use of dairy products' is far too broad, has no identification of the group of people being studied and gives no opportunity for original work as the information already available is substantial.

If a tasting panel is to be carried out as part of the investigative section then it is perhaps more appropriate for candidates to select dishes which can show definite comparisons. For example, if the study involves increasing NSP for a specific group of people then one or two dishes could be prepared with one as a control and the other(s) showing the adapted recipe. A ranking or preference test could be carried out with a nutritional analysis included to highlight the changes made.

When using young children as the subject of a study, candidates could adapt wordy questionnaires with the use of smiley face captions or pictures to help the children complete the task easily.

If candidates choose to include an introduction to their study then they should ensure that the content of this not repeated in any other section within the study.

### Choice and Justification

In most studies the topic chosen was relevant to the syllabus. A few candidates had selected topics which were not on the syllabus and hence lost marks for their choice in this section. Stronger candidates actually identified from which section in the syllabus content their ideas had originated.

It is important that reasons for choice of coursework title are given. Most candidates gave at least one reason but better candidates gave several. Some candidates, however, gave very little indication of why a particular topic had been chosen. Appropriate reasons for choice could be that a subject is of personal interest, relevant to world health issues, topical in local media or that the participants of the study are fellow candidates and will be easy to contact. Occasionally candidates seemed to confuse their reasons for choice with the aims and objectives of the investigation.

It is expected that candidates clearly, but briefly, state the investigative methods and resources they intend to use to execute their study. There is a check list to help with selection in the assessment scheme.

Occasionally, topics were chosen which gave no opportunity for individual research and did not lend themselves to a range of investigative procedures. A few candidates chose to investigate topics where there is a vast amount of information already available, such as the importance of lifestyle and food choice or the need for calcium for pregnant women. When choosing their area of study it is important that candidates bear in mind the necessity for the parameters in the title to be clearly defined to highlight the limitations of the study. A title such as 'pulses', does not indicate the boundaries of the study. However, if the chosen title was 'the importance of pulses in the diet of vegetarian candidates in class 7 in my college' this is more specific and delineates the framework the study will follow.

These points have a direct influence on the possible marks which can be gained. Candidates should be encouraged to choose a subject for their study in which they are able to demonstrate their ability to collect data in a variety of ways, indicate how it relates to the syllabus and why they have selected the topic for research.

**Planning**

In some cases this section was not considered in enough depth. It is expected that a list of questions to address could be formulated or a list of tasks drawn up. The criteria in ***section 6.2*** clearly states answering the questions *'how, when, where and with whom'* as a formula to follow. The objectives must be clear, so that it will be possible, when evaluating the study, to assess whether those objectives have been met. The aims and objectives of the study must be clearly defined. The main aim is always to investigate the problem identified in the title; the objectives are practical tasks that can help to achieve the overall aim. There should be several objectives since they are the reference points against which the success of the investigation will be judged. Sometimes objectives were set out in such a way that they could not be translated into tasks. Candidates frequently stated that one of their objectives would be to educate members of a community on a particular topic. Apart from being outside the scope of the study, it would be impossible to provide supporting data to quantify the success of such an objective.

Many candidates listed their proposed activities and dates when they would be carried out. This shows the importance of thorough, logical planning and an appreciation of the amount of time which needs to be allocated to certain procedures. When evaluating the investigation, it is useful to highlight areas which took less or more time than expected. It allows contingencies to be discussed, making for an interesting investigation. Some candidates produced a diary of activities. Although this shows how the investigation progressed, it does not constitute a plan. A plan of activities with suggested dates should be included in the planning section and a diary of actual procedures and dates in the evaluation section.

In order to achieve high marks it is important that each method of data collection and collation used is considered and justified in detail. It is helpful to explain how each method will help to achieve particular objectives. Most candidates mentioned the methods they intended to use but gave no further information. When questionnaires or interviews are used, it is important to explain how respondents are selected and to justify the type of questions to be included. If observations or shopping surveys are to be conducted, justifications for choosing those methods of data collection should be given. If interviews are to be conducted it is important that reasons for selecting particular individuals are justified.

As indicated in the assessment scheme, samples of questionnaires, interview questions and so on should be included in this section.

**Theoretical research**

As stated in previous years, the purpose of this section is to give candidates the opportunity to demonstrate their ability to research their topic widely before producing a chapter which contains information relevant to their study. All studies gave evidence of some research but the amount and quality was variable. The candidate's task is to select and summarise background information appropriate to their study and to set out

the context into which their study will fit. It is essential that this is original work and is the result of consulting a variety of books, texts, articles and possibly web sites. In many studies this was the weakest section. Sometimes it consisted of numerous pages of text taken directly from books rather than a summarised account in their own words tailored to their title

Many accounts were disjointed and too long because every available piece of information from one source was followed by that from another so there was considerable repetition of information, differences in writing style and presentation. This is not acceptable since it is not the candidate's own work.

It is commendable if candidates include topical information, perhaps from newspaper or magazine articles, Government reports or from the Internet. This information should, however, be incorporated into their account. The article or extract can be included in it's entirety in an appendix.

The importance of acknowledging sources must be emphasised. All studies should include a Bibliography, but it is expected that sources are acknowledged within the text wherever appropriate and should include web addresses. If diagrams or charts are included they, too, must be acknowledged. Although there is no recommended length for the research section of the study, it must be remembered that this should form the basis for the investigative work. The research report should be a summary of all of the relevant information gathered. It is not the task of the reader to select relevant facts. The research report should set the scene for whatever is to follow by giving the reader enough background information.

This section has an allocation of ten marks and should reflect the candidate's skill at collecting, summarising and presenting the information already available. So, very long theoretical reports, in excess of twenty pages, are unnecessary.

**Investigation skills**

This is an important section to which 20% of the marks are allocated. The most successful studies used a wide range of investigative methods to collect data. Many candidates used at least five different methods and so could achieve high scores. Possible investigative methods are suggested in the syllabus and the assessment scheme indicates the range of marks available according to the number of methods chosen. Clearly, if a candidate chooses two methods of investigation, the maximum score possible will be lower than that of a candidate who chooses six methods.

Some candidates effected shop or market surveys, visited farms, factories, clinics and hospitals, individuals were interviewed or letters or e-mails were sent and observations were carried out. Many conducted questionnaires and several set up tasting panels to compare and evaluate cooked dishes. Photographs were often included and, as well as providing useful information and another dimension, they also contribute to the attractiveness and uniqueness of the study.

It is expected that for each method of data collection used, candidates would explain how, where, when, why and with whom the investigations were carried out. When compiling questions to include in interviews or questionnaires candidates should give careful consideration to each question and consider whether its inclusion is necessary. Candidates should be reminded that objective questions should be asked which can produce data relevant to their study and which can be easily collated. Most candidates correctly included a blank copy of the questionnaire they used but relatively few showed evidence that questions had been tested before being used in the investigation.

There were a few instances where all completed questionnaires were included; this is unnecessary. Only an analysis of the data collected from the questionnaires is required.

Although it was often stated in the planning section that interviews or market research would be carried out, it was sometimes impossible to find any evidence that these techniques had taken place. If planned work cannot be conducted, reference should be made to it in the evaluation section.

It was a matter of some concern that many candidates interviewed very busy professional people and appeared to ask questions which could have been answered by looking in books. There is no need to ask a doctor or a pharmacist to list the causes of anaemia for example. It is the experience of carrying out interviews that is important, not the status of the interviewee. Candidates should not expect to be able to visit hospitals and clinics to talk to patients. Discretion and confidentiality should be at the forefront of any data collection. Questions on family income should never be included in questionnaires for the same reason. This is rarely relevant to the topic being studied.

A few candidates carried out research in Primary Schools, explaining how children were weighed and measured and conclusions drawn. In more than one study a candidate planned to assess children for symptoms of a deficiency disease. Clearly this is unacceptable; candidates would have neither the authority nor the expertise for this work. Teachers must be aware of what their candidates plan to do during visits to other organisations and be prepared to intervene where necessary. Candidates often included recipes in their study without any justification. Every aspect of the investigation should have a purpose and should be part of the original plan.

**Collation and presentation of data**

This section is worth 20% of the total marks awarded and is important since it must take each of the methods of data collection used and present the information collected in an appropriate form which is clear and easy to understand for the reader. Candidates should be encouraged to give careful consideration to everything included ensuring that it is necessary or appropriate.

Candidates usually presented their findings very well and were able to demonstrate their skill at computer graphics as well as using methods of presenting data without the use of a computer. The best studies showed many different and varied methods of presenting data. The range included prose, tables, line graphs, bar charts, pie charts, histograms, comparison charts and photographs. Many candidates presented their information in a wide range of different ways – sometimes as many different ways as their computer would allow! It is sometimes better for the reader to have information presented in a consistent way. Most of the data was well presented, although titles and keys were often omitted from charts. Photographs were not always given titles and sometimes there were several pages of photographs without any explanation of their relevance

Spreadsheets were used where appropriate but sometimes included too much information.

Sometimes prose would have been better than a chart to show simple information. It would be perfectly acceptable to state that 50% of a group preferred, for example, one dish. This is more logical than producing a pie chart with two differently shaded areas.

On many occasions information was presented without reference to the investigation. If the information relates to a questionnaire it would be helpful to set out each question before presenting the results. The reader should not have to refer to the questionnaire in the planning section or appendix in order to understand the data presented. Some studies lacked explanations; data was presented without even a few sentences to summarise findings. Sometimes an interview was summarised in a few sentences. Conclusions can only be drawn if they are supported by facts. Data should always be presented separately from summaries and conclusions.

**Conclusions**

This part of the study was often carried out in a very superficial way. Many candidates seemed to attach little importance to it and wrote very briefly, some not much more than a few lines. It is essential that candidates present an accurate summary based on the evidence of the data they have collected and this should be set out separately not interwoven with the presentation of the data collected.

This is the section where the collated evidence will be interpreted by facts gathered and conclusions drawn. On many occasions there was no evidence to support the conclusions drawn. It was as if the outcome had been established without taking any evidence into consideration. It is not enough to state that 'the data shows that...' without supporting the statement with evidence from the work previously outlined. The conclusions drawn should lead candidates towards making recommendations for further action. These recommendations could be for implementation by individuals, families, organisations or governments. They may or may not be practical but the importance is in the fact that the candidate can develop solutions based on the evidence of their investigations. Whatever form the recommendations take, they should be seen to follow logically from the findings of the study. Weaker candidates listed recommendations which had little or no link to their study or suggested actions which are already well known, such as those based on following dietary guidelines. An illustration of this would be candidates who carried out investigations on the consumption of specific vitamins or minerals by a particular group. It would not be expected that the recommendations would be a range of ways of including these in the diet; that information can be found in many books, magazines or websites and is not original. Recommendations should be the result of careful thought on the part of the candidate to develop solutions in the light of information gathered from their study. It is an opportunity for candidates to give their own ideas.

**Evaluation**

This is an important section, worth 10% of the final mark for the study. As with previous years many candidates gave little attention to it and wrote very briefly. As outlined in the assessment scheme, reference should be made to original aims and objectives and plan of action so comment can be made on the success of the study. This is not supposed to be an area solely for candidates to describe their own strengths and weaknesses; it is a forum to revisit and review each aspect of the whole study and investigate if aims and objectives have been satisfied or not. Stronger candidates actually listed their original aims and objectives and outlined where in the study these had been achieved as well as constructively criticising their original plan of action.

The success or lack of success of each of the methods of data collection used should be considered as this would provide valuable information for future investigations. Suggestions could be made for improving weak areas and extending research.

Most candidates were able to the state personal benefits they had gained from carrying out the study and these were generally well expressed. Some mentioned that they had become more confident and had enjoyed meeting people from other backgrounds; others were pleased to have become more proficient at using particular computer programmes. Sometimes candidates described problems they had encountered and described how they had dealt with them. This was commendable since it is often considered that weaknesses should be overlooked. To acknowledge problems and to consider how to address them is important. Many candidates mentioned that the time allowed for some sections of the study was unrealistic and explained how they dealt with the problem. This highlights the advantage of making a time plan before beginning to collect information. All of these are important and candidates should not hesitate to mention their own individual gains. Candidates sometimes included in their list of weaknesses that respondents did not return questionnaires or did not take the questions seriously. Others noted that because the study was on a small scale it could not be used to make generalisations on the rest of the population.

**Presentation**

The general appeal of the work was good, attractively presented, logically and sequentially organised with care taken to ensure uniformity of font throughout. Candidates should, however, be reminded to adhere to the word limit, some studies far exceeded the expected length of study and others fell far short of the restrictions. Content lists, acknowledgements and bibliographies were included. Candidates are to be encouraged to be wide ranging in their reading list and use books, websites, magazines, newspaper articles and so on which are appropriate for this level of study.

The majority of candidates included a diary of activities, some in the form of a Gannt chart. The covers were of a high standard demonstrating the originality and flair of many candidates. They are to be congratulated on the presentation of their work.

Candidates should be reminded that it is not necessary to have studies bound professionally, nor is it wise to mount each page on card. This makes the study more difficult to handle. Sometimes candidates mentioned the expense involved in printing their work. Although printed work looks professional, there is no reason why the investigation should not be written in the candidate's own handwriting, as the marks are awarded for content.

As a result of their investigation, some candidates had included bookmarks, pamphlets and posters that they had designed themselves to use with their target group or in classrooms, canteens and meeting halls. This was an original and very interesting development to the study and showed commendable effort.