

Report on the Components

June 2009

R482/R/09

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This report on the Examination provides information on the performance of candidates which it is hoped will be useful to teachers in their preparation of candidates for future examinations. It is intended to be constructive and informative and to promote better understanding of the syllabus content, of the operation of the scheme of assessment and of the application of assessment criteria.

Reports should be read in conjunction with the published question papers and mark schemes for the Examination.

OCR will not enter into any discussion or correspondence in connection with this Report.

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Entry Level Science (R482)

Introduction

An interim report is sent to centres after their submission of work on 6th March which means that the centre can act on the advice of their Moderator and submit final marks on 15th May that ought not to need amending. However if a centre sends in work late to their Moderator they may not have time to carry out any appropriate amendments.

The early submission requires centres to send in marked examples of End of Item Tests, the Study of a Science Topic and a Data Analysis Task in order for the moderator to return an interim report form. Please remember that the overall points should be rounded down.

The moderation period ends on 15th April, so Centres need to send work prior to this date.

The R482 specification has proved to be successful after two years. This must be due to the popularity of the course with both the teachers and the candidates and the training events that have taken place around the country. The possibility of using the Study of a Science Topic in Gateway Science or in Twenty First Century Science has also not escaped the notice of centres who have also double entered candidates for Entry Level Science and GCSE Science.

Please note however that the Gateway Science writing frameworks do not cover the same criteria as Entry Level Science and using these an-adapted could place extra demands on candidates and reduce the ability to score well.

Accreditation meetings continue to take place every year and there is no charge for attendance. There will be a repeat of the R482 meetings and details are available on line from the OCR website www.ocr.org.uk. Click on Training and then Science (not on Entry Level Basic Skills). Also available (free of charge) are the booklets 'Distance Learning Support for Accreditation' and 'Practical Activities Support'.

Copies of both can be obtained from the Subject Officer, Entry Level Science, OCR, 1 Hills Road, Cambridge, CB1 2EU.

The training events for 2009 are proposed as follows:

Training 2009 – 2010

OCR Entry Level Certificate Science Plus (R482): Get started - successful first delivery

Day and date			Place
Tuesday	29 th	September	Birmingham
Thursday	1 st	October	London
Friday	9 th	October	Newcastle
Thursday	15 th	October	Bristol
Thursday	5 th	November	Manchester
Friday	13 th	November	Sheffield
Tuesday	12 th	January	London
Thursday	14 th	January	Birmingham

OCR Entry Level Certificate Science Plus (R482): Get ahead – Raising Entry Level students to Gateway/Twenty first century science standard (Dual entry)

Birmingham 06.11.09

The popularity of the R482 course is indicated by the entry numbers and this year 6748 Candidates were entered from 526 Centres

Moderation procedure

Internal moderation should take place in Centres before submission to the Board's moderator.

A disadvantage with this early moderation and the production of an Interim Report is that entries for Final Certification will not all have been processed by OCR and moderators will be working with the Provisional entries submitted by Centres.

However there is one major advantage and that is errors can be corrected before final submission of marks.

Administration

Fewer centres omitted the Centre Authentication Form (CAF) this year. This form must accompany any coursework from a Centre to a moderator. A problem that still arises is the late entry from Centres. Many Centres made provisional entries and then did not make final entries. This increased the workload for moderators in chasing up non-existent work.

Moderators continued to send out letters to Centres early in the moderation process pointing out where administration, particularly arithmetic, was not correct (form L3). Sometimes this was from Centres in which the marking of tests and Study of Science Topics and Data Analysis Tasks was otherwise exemplary.

Part of internal moderation within a Centre should be checking that marks have been correctly added and transferred. Centres should use the Candidate Record Cards as working documents throughout the course. Filling these in at the last minute can lead to errors.

Many of these errors and omissions remain similar to those noted over previous years.

- Delayed submission of the sample of work, even after being contacted by the moderator
- Not enclosing a covering letter with the sample giving the name of the contact teacher or not saying in the covering letter how internal standardisation was carried out (if the course is taught by one teacher than the letter should simply say this)
- Not putting Candidate names on tests or assessed work which causes serious problems over identification of work
- Submitting tests for moderation that had not been entered on a Candidate's Record Card, or had not been marked
- Incorrect totalling of points for End-of-Item tests on page 4 of the record card
- Rounding the Final Total of End-of-Item test marks and/or Final Total of Can-do tasks to whole numbers rather than to one decimal place
- Not submitting Study of Science Topics and Data Analysis Tasks for the chosen candidates
- Not rounding down the final mark
- Sending the moderator copies of the MS1 in May. It is not necessary to send this to the moderator, just OCR

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- Counting more than 30 End-of-Item tests. Candidates can take more than the 30 tests up to the maximum of 39 but only the best 30 are counted
- Not counting the best 8 Can-do tasks (or counting more than 8)
- Not posing the Study of a Science Topic as a question. It is difficult to award marks under Aspect C if the Study of a Science Topic task has not been posed as a question
- Sending the original of the Candidate Record Cards. Photocopies should be sent as they will not be returned and Centres need to refer to the originals when the Interim Report Forms come back and these may point to errors.

In 2009 the Centre must send

1. Centre Authentication Form (CAF)
2. A headed piece of paper with the name of the teacher responsible and preferably including **an email address** as well as telephone number and Centre address
3. A letter stating how standardisation was carried out in the Centre
4. A **photocopy** of the Candidate Record Card (CRC)
5. Marked examples of the Study of a Science Topic
6. Marked examples of Data Analysis
7. ALL marked End-of-Item tests for the six chosen candidates

End of Item Tests

The 'colour' of End-of-Item tests that Candidates take depends on the year in which they start the course, they should not normally use a mix of colours.

Moderators take and remark a sample of 6 tests per Candidate selected from the whole range of tests attempted by the Centre so that a balanced overview of the Centre's marking is obtained.

Most Centres had marked the tests closely following the published mark scheme and had marked in accordance with the instructions on the front cover of the schemes. Centres are to be thanked for the care that they put in to this part of the assessment.

Errors that did occur with the assessment of tests included

- Marking the tests in colours other than red (especially green which the moderator uses).
- Marking 'list' type questions incorrectly
- Circling totals at the end of each question (Use the one tick – one mark method)
- Incorrect transfer of points to record cards
- Failing to record the test on the record card
- Recording a mark for a test not sent as part of the portfolio

On rare occasions teachers may consider that an answer that a student has given is correct but is not covered by the mark scheme. It is acceptable to mark such an answer correct but there should be annotation on the script to explain why the mark has been given. (even if only bod – benefit of doubt).

Can-do Tasks

Some Centres had students completing several End-of-Item tests and Practical Activities but ticked very few Can-do tasks; this was even though the Skills Assessment work carried out must have involved the Candidate demonstrating some tasks successfully.

Only the best 8 tasks can be chosen so the maximum is 8 three point tasks = 24 which is then halved to give a total out of 12 points. Low level tasks are useful for training and allowing candidates to show their progress, but opportunities need to be given to allow candidates to perform some of the higher level tasks.

Skills Assessment

In attempting to take the course in one year some centres did not provide the candidates the opportunity of gaining points for the two Skills Assessments prior to moderation taking place. Some centres had completed no Studies of a Science Topic and others had not completed a Data Analysis task whilst a few had done neither. The moderator needs to see how these have been marked by the centre for the Interim Report.

Study of a Science Topic

There were some unusual titles this year such as “Which is the best Orange Tariff?” which is hardly very scientific. “Is plastic surgery a lifesaver or a makeover?” was a surprise title.

“Is it harmful to remove hedgerows?” could have produced some interesting aspects as might “Do supermarkets use too much packaging today?”

The commonest Study of a Science Topic was “Is chocolate good for you?”. This may be coupled with the fact that this topic had been mentioned at training events. However the commonest fault was to omit the references or not finding any science evidence for and against to allow a conclusion to be reached. Topics with titles that ask no questions, such as ‘Pandas’ make it difficult to find science patterns in data, and this makes it difficult to reach a suitable conclusion based on the evidence collected.

In Aspect B we are looking for patterns and it is possibly easier to do this when data is used but this can also be in the form of commenting on the information found.

Best practice is to allow candidates a limited free choice, and then allow some research time to see if they can find any information ‘for and against’. Research can be from science books, library books, newspapers, or the internet. Candidates need to be encouraged to find suitable visual material, such as science diagrams, charts or data along with factual information. Once the research part has been done, candidates need to write their report. This could be done using IT (word-processed, powerpoint, or printing out to making posters, or handwritten).

Where material has just been ‘cut and pasted’ from internet sites, teachers should annotate these sections as such. It is expected that marking will show where awards have been made, and this is best done using the codes, such as C=2 if a conclusion has been reached, but without using the data found.

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Some suitable titles are

Should whale hunting be banned?
Do supermarkets use too much packaging?
Should smoking be banned in public places?
Is junk food linked to obesity?
Is it okay to diet?
Is sunbathing good or bad?
Is drinking alcohol harmful?
Should we put endangered animals into zoos?
Should mobile phones be banned for under 8's?
Or more generally – Are cell phones dangerous?
Is the climate changing?
Is Pluto a planet?

“Car Safety” as a Study of a Science Topic would be better approached as “Does speed kill?”.
“Petrol versus Diesel” would also be better posed as a question.

“Sunbathing”, “Kilauea Tsunami” and “Mobile Phones” are not suitable as they stand but also would need to be set as a question so that Aspects B and C, mark descriptor 4, can be reached if relevant data can be found and utilised.

Candidates are able to get better and easier access to Aspects B and C if the topic is posed in the form of a question. For example: “Are we doing enough to preserve the wild tigers?”, “Is chocolate really good for you?”, “Was the government right to ban smoking in public places?”. If candidates are given Topics in this format they can use their research to answer the question and to justify it.

Data Analysis

A most unusual task was the centre who used coloured pencils to sort. This was useful as a guide to what might be carried out but it was not scientific enough for use in Entry Level Science as all the Aspects could not easily be matched for the mark descriptions.

Many Centres used the whole class to collect data – and craters and electromagnets proved popular, but few surveys were seen.

It would be useful for centres to annotate work so that an individual's contribution can be identified and this is most important when the data is collected by more than one candidate.

Best practice is to use a class activity where candidates can collect data, and then share it – making an individual decision about how much, and what to use. This would allow full access to the Aspect A marking criteria of selecting results, plotting charts, and for Aspect B of stating a trend. Tasks which involve science and use equipment are preferable, so that a trend can be explained using science ideas, and comments on the reliability of the data can be made.

A list of Practical Activities that have been found suitable for Data Analysis may be useful:

- Investigate the effect of exercise on pulse rate. (Beware of over-marking because of the simplistic nature.)
- Which foods contain most energy? Which foods contain most water?
- Investigating the effect of exercise on breathing. (Again beware of the simplistic nature of the experiment leading to over-marking)
- Investigation of flow of gravy with temperature or algal thickening
- Investigate the effect of temperature or pH on enzyme activity
- Investigation into the stretchiness of fibres
- Investigating the strength of fibres.
- Investigating the strength of 'concrete' beams
- Investigate the strength of paper bridges
- Investigate the effect of length or thickness of wire on a current
- Investigate the size of a current needed to burn out a wire
- Investigate how to make an electromagnet stronger
- Relating stretching force to extension and thickness for elastic bands
- Investigate the effect on the shadow of changing the relative positions of a screen, a puppet and a shadow
- Investigate the effect of speed and 'weight' on the size of craters made by falling objects.
- Find the effect of using packaging materials of different types to keep a small beaker of water warm
- Investigate the insulation of various materials and keeping something cool
- Investigate the effect of friction on stopping distance.

The centre that carried out a type of crisp investigation undertook what might be an interesting activity but it is not suitable as a Data Task.

There were a number of discontinuous variables used for the Data Tasks, such as a type of bridge, and these prove difficult to mark as it is impossible to find a trend.

Key Points

- **Make sure your candidates are entered in January**
- **Check the work sent is all entered on each Candidates Record Card, and the total is added correctly and rounded-down**
- **Make sure the Study of a Science Topic is posed as a question, and encourage candidates to find information 'for and against', so they can reach a conclusion**
- **Try to investigate a single continuous variable for the Data Task, so that candidates can discover a trend and plot a graph.**

Grade Thresholds

Entry Level Certificate

Science R482

June 2009 Series

Component Threshold Marks

Component	Max Mark	3	2	1	U
1	100	75	50	25	0

Option/Overall

	3	2	1	U
Percentage in Grade	24.16	40.75	29.35	5.74
Cumulative Percentage in Grade	24.16	64.91	94.26	100

The total entry for the examination was 6748.

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