

Moderators' Report/ Principal Moderator Feedback

June 2011

GCE Biology (6BI03)
Practical Biology and Research
Skills

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GCE Biology - June 2011 Visit or Issue Report (6BI03)

Research Skills

Unit 3 involves generic 'How Science Works' skills and so the actual topic could be anything! It could be a Visit; it could be a topical Issue. There is no limit on word length. The students need to:

- Identify and describe a biological problem;
- Discuss how scientists are solving this problem, giving the data or evidence;
- Show how effective or appropriate this solution is, giving the data or evidence;
- Identify the implications of the scientists work, including any benefits or risks;
- Identify and discuss any possible alternative solutions, in the light of the implications;
- Use source material and quotes, both web and non-web;
- Acknowledge these sources;
- Evaluate these sources, giving the evidence for validity;
- Communicate ideas effectively, using relevant visuals.

Types of reports

Out of a sample of 422 projects, 30% were Visit reports and 70% were reports on Issues. The number of visit reports is lower again than in 2010 and is rather disappointing. There may be problems with finance, 'cover' and numbers etc. which are behind this drop. However, the welcome increase in the *variety* of Issue reports in 2010 has been exceeded by another 19% increase and this is excellent, showing that students are being encouraged to take on original pieces of work that interest them. The table below shows a tremendous variety of interesting and original ideas for reports into the work of scientists. The most popular were Alzheimer's and Parkinson's disease and in fact, diseases seemed to be very popular, presumably because there is an obvious problem that needs solving. Like last year, very few reports were on inappropriate titles.

Zoos are still by far the most popular venues for a Visit but there is still no further increase in the *variety* of visits, probably for the reasons suggested above. For more detailed comments on the individual assessment criteria, see below.

Issue Topic	%
Alzheimer's	5.0
Parkinson's	4.1
ADHD	3.5
Depression	2.8
Leukaemia	2.2
Asthma	1.6
CVD	1.6
Breast Cancer	1.3
Cervical cancer	1.3
Muscular sclerosis	1.3
Insomnia	1.3
Osteoporosis	1.3
Gene Doping	1.3
Biofuels	0.9
Diabetes	0.9
Epilepsy	0.9
HIV / AIDS	0.9
Infertility	0.9
Lupus	0.9
Obesity	0.9
OCD	0.9
Ovarian Cancer	0.9
Stem Cells	0.9
Yellow Eared Parrot	0.9
Abortion	0.6
Anabolic steroids	0.6

Together with (in equal order of frequency) Animal testing, Anorexia, Arthritis, Atherosclerosis, Autism, Bipolar disorder, Colon Cancer, Coral reefs, Down's Syndrome, End stage renal disease, Fibromyalgia, Glaucoma, GM crops, Orang Utans, Overfishing, Prostate cancer, Red Palm Weevil, Schizophrenia, Sickle Cell Anaemia, Smoking, Testicular Cancer, Thalassaemia, African Elephant, African Wild Dogs, Age related macular degeneration, AIDS, Alcoholic Hepatitis, Algal blooms in China, Alopecia areata, Amblyopia, Amylotrophic Lateral Sclerosis, Analgesics in paediatric medicine, Angina, Arbaclofen and ASD, Back Pain, Bananas and Hepatitis B, Binge drinking, Bioprosthesis, Bioremediation of Oil Spills, Blindness, Bulimia, Cane Toad, Cataracts and steroids, Changing the genetics of an embryo, Cheetahs, Childhood Eating disorders, Cholera, Climate change and polar bears, Cognitive therapy, Colony collapse disorder, Conjoined Twins, Conservation, COPD, Creatine, Crohns Disease, Cystic Fibrosis, Deep Brain Stimulation, Dementia, Dengue Fever, Diarrhoea, DiGeorge Syndrome, Dogs to detect cancer, Doping in sport, Drop Foot, E. Coli infections from farm animals, Ebixa and Alzheimers, Ebola Virus, Ecstasy, Ecstasy and trauma, Endometriosis, Equine deworming, Equine tendinitis, Fat genes, FOP, Fuch's dystrophy, Gall stones, Genetic diseases in dogs, Germination of native plants, Gingivitis, Global hunger, Global Warming, GM Maize, Graves' disease, Guano as fertiliser, Heart disease, Hepatitis C, Human / animal hybrid embryos, Kakapo, Ketamine, Kidney transplants, Kirtland's Warbler, Laminitis, Leishmaniasis, Lithium and bipolar disorder, Long QT syndrome, Lymphoma, Malaria, Male Pattern Baldness, Medical marijuana, Melanoma, Migraine, Minocycline, Mobility for the elderly, Mountain Cougars, MRSA, Multiple myeloma, Muscular Dystrophy, Nanotechnology, Narcolepsy, Non ketotic hyperglycaemia, Non ruptured tubal ectopic pregnancy, Ocean acidification, Oil Spillages, Osteogenesis imperfect, Overeating, Peanut allergy, Pressure Ulcers, Prolapsed discs, Prosthetic hands, Proventricular dilatation disease, Psychopaths, PTSD, PTSD and childhood cancer, Rabies, Red Squirrels, Risk of cancer, Safe Drinking Water, Shortage of donor hearts, Skin cancer, Snakebites, Spinal Cord Injuries, Stem cells and myocardial infarction, Stress, Stroke, Swine Flu, TB , TB and HIV, TB vaccination, The Gharial, Thrombocytopenia, Tigers going extinct, Tissue Engineering, Tissue Regeneration, Trehalose & Huntingdon's disease, Vaccinating badgers, Venous Thromboembolism, Vitamin A deficiency, Whale strandings, World hunger, Xenotransplantation, Peptic ulcers, Myocardial infarction, Ulcers and debridement, Hypertension, Lung cancer, Red tide, Bedwetting, Menopause, Banana variation, Grommets & Otitis Media, Cancer & Aspirin, Snake venom, Reproductive cloning, Cannabis, Frizzy Hair, High Heels, Cellulite, Erectile dysfunction, Premature ageing, Sinusitis, Glucose 6 phosphate dehydrogenase deficiency, Nephrotic syndrome and Semen allergy.

Visit Topic	%
Marwell Zoo	23
Leech Farm	21
Leech farm	14
Colchester Zoo	16
Chester Zoo	11
Howletts Zoo	7
Bristol Zoo	6
Wildlife Park	4
Pfizer	4
Hospital	4
Clinic	2
Golf Course	1
Care Home	1
University	1
Interview with cerebral palsy patient.	1

Marks awarded

The sample of scripts this summer showed a mean score of 28.5, better than last year but with a 0.7 mark difference between Issues and Visits. The data confirm yet again that these assessment criteria are still more accessible for the students compared to the original SNAB criteria before 2009. Indeed, 15.6% of 'top' candidates now got more than 36/40 marks in this sample compared to only 10% in 2010 or 2.8% in 2009. This is excellent.

In addition, at awarding in July, there was no significant difference between the moderated (1A) scripts and the examined ones (1B).

The distribution of marks for the various criteria is shown below as a % of the possible total ie. 100% for 1.1a would mean that all students got the maximum of 2 marks.

Criteria	Description	2011 %
1.1a	Identify problem or question	92.0
1.1b	Description of problem	78.1
1.2a	Discuss methods or processes	83.6
1.2b	Data or solutions to problem	38.1
1.3a	Valid, reliable data / graphs, tables etc	54.1
1.3b	Methods appropriate or effective?	65.0
2.1a	Implications identified	72.9
2.1b	Implications discussed	58.1
2.2a	Advantages discussed	70.2
2.2b	Risks discussed	57.0
2.3a	One alternative solution discussed	73.7
2.3b	Another alternative solution discussed	61.2
3.1	Sources used	92.3
3.2a	Bibliography	92.8
3.2b	Sources acknowledged in text	73.2
3.3a	Sources valid or reliable?	69.4
3.3b	Evidence for source validity	14.1
4.1	SPG / well set out	91.1
4.2	Technical language and visuals	69.5

Problem and solutions

Compared to 2010, the data show that candidates are better at explaining precisely what the problem is but are still finding it more difficult to explain the biology behind it.

Some reports still just posed a question which was very difficult to answer in terms of a solution or providing data. Others, as in 2010, still described the problem in great detail and often any data or evidence related to the problem itself rather than the solution.

Students were still finding it difficult describing what biologists do and still found it difficult to be analytical, giving data or evidence. They were a little better at explaining why the methods or solutions were effective or appropriate. Many reports were still far too descriptive. It was not clear what anybody was actually doing.

Interestingly, as described above, there were more reports on diseases or conditions where it was much easier to identify a problem, discuss it and then look at the solutions, ie treatments. In fact, there was an 83% increase in the number of reports on human diseases! However, many of these reports on diseases tended to give a descriptive, almost 'essay-like' account, of the treatments or the drugs without actually saying what people were doing.

Implications and alternatives

Like last year, many are good at identifying the implications of the methods or solutions employed but are not so good at explaining them. However, **even more** candidates tended to identify the implications associated with the problem itself rather than the solution. Similarly, they still find it more difficult to discuss or explain the advantages or risks and often just gave lists of benefits and disadvantages. There was an improvement for 2.3 in that an increasing number did manage to discuss two alternative solutions in some detail.

Source material

Students were quite good at using source material, acknowledging it and giving an opinion on whether their source material was valid but there was no improvement in actually giving any evidence for this evaluation. If anything, this was worse than in 2010. A significant number also failed to use quotes when using their source material.

It needs to be stressed yet again for a small number of centres that the SNAB or Edexcel textbook will not be accepted as the non web source. This is a piece of coursework where one might expect some extra research.

Communication

Most reports were very well written and presented but some were still short of appropriate 'visuals' in the form of graphs, tables etc.

General comments from the examining and moderating team.

- Some candidates wrote far too much on the problem itself rather than the solution;
- A good number of candidates were addressing problems that had no real solution;
- Some candidates did not make a clear statement on the nature of the problem;
- There was more evidence that centres had used the consultancy and exemplar material effectively;
- Scripts that adopted a simple problem-solutions approach again tended to score more highly than those that were based around a question. Such questions were often poorly defined;
- More scripts this year had main solutions that were not biological in nature. Indeed one or two scripts contained no biology at all.
- Some students did not explain what scientists were doing. Instead they gave descriptive accounts of the 'solution';
- Some candidates failed to introduce any data at all;
- Many used graphs but did not discuss or explain them;
- Alternatives were often well done but implications, advantages or risks were often confused;

- Benefits or advantages were generally less well described than risks/disadvantages. Often benefits were confused with implications of the solution and so gained no credit;
- Implications often related to the problem;
- Too many talked of 'playing God' without actually explaining this;
- The best presentations often mirrored the criteria themselves;
- Cross referencing of source material was rare;
- The bibliographies were often well executed however very few students scored highly when it came to evaluating the validity or reliability of two sources. They often made rather vague comments of suitability of the author but did not explicitly cross reference data;
- It was very clear which centres had done a good job of training/teaching the students about the issue report and how to successfully address each criterion. It seemed as though some centres had left students "to get on with it" without any help or guidance.

Centre priorities

- Being able to discuss what scientists do when solving a problem;
- Using data or evidence when discussing what scientists do and how effective their work is;
- Discussing the implications of what scientists actually do rather than the original problem itself;
- Being able to give the evidence for any critical evaluation of source material or commenting on the validity or reliability of the data used.

Only 4 reports were potential cases of malpractice where candidates had lifted whole websites or parts of websites and have presented it as their own work. Although cases of suspected malpractice are small in number, centres must remember that they are responsible for their students properly acknowledging source material.

Appendix A: Grade boundaries

Grade boundaries for this, and all other papers, can be found on the website on this link:

<http://www.edexcel.com/iwantto/Pages/grade-boundaries.aspx>

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