

Cows inseminated by seamen: errors in the English of highly selected undergraduates

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Introduction

One way to gauge the effectiveness of education in English is to look at the English standards of the products of that system, in students for whom intelligence is not limiting. Imperial College London is rated as one of the top three universities in Britain, with highly selected students, all with good or excellent A-Levels or equivalent qualifications. One hopes that any faults in writing would have been eliminated during the first year at university, where there is a lot of course work that is returned with comments.

What follows is an account of just some of the errors I recorded recently from 54 second-year students and 21 final-year students in their genetics work for me, excluding the one registered dyslexic student. Most examples are from a six-page essay and a longer practical book, done in the students' own time, and which should have been checked before handing in as they count heavily in course work assessment. Some of the essays and practical books were hand-written and some were word-processed, when the automatic checkers in Microsoft Word indicate on screen any non-existent spellings by red underlining and grammatical errors by green underlining. The checkers do not highlight wrong word choices. A few examples here are from hand-written degree exam scripts or typed theses.

This paragraph shows examples of errors by UK-born, UK-educated students; the first two quotations are from students awarded first class honours degrees this summer. One consistently put *implicated* for *implemented*, *peace* for *piece*, and *defiantly* for *definitely*. Another wrote: *It initiats a undisired non-specific response in mamammals*. One wrote that the duck-billed platypus has a *complex pectoral gridle* (*girdle* was intended). Another put *we except* for *we accept*, and one wrote *holy cheese* for a cheese with holes, *largers* for *lagers* and *been curd* for *bean curd*. Camembert cheese makers would be surprised to find that their fungi induced *lignification* (woodiness), when *liquefaction* was intended.

The assessed essays included the nonsense sentence: *Sheep are the sheep genome was sequenced in*. Other confusions included: *There are many more pre-natal multiple births than recorded live births*, and *Genetic twins have all their genes in common, so variation in them is due to their finger prints*. At times, almost one word in three was wrong: *...male fighting offer female whom usually have mating preferences getting and keeping males* (males fight over females, who usually have mating preferences in getting and keeping mates) – that was from an African student educated in England for the last 14 years. Even in the very important final-year project reports, there were typographical errors which should have been spotted in checking, such as: *The results will be sued [used] in discussion*; *The improved version only spanned [spanned] one side of A4*, and *low alcohol assumption [consumption]*.

There were several examples of ambiguity, as in: *Parents may have physical problems looking after children with “flipper arms”*. It is the parents, not the children, with the thalidomide effect. There were clumsy unscientific passages such as: *When the plant wishes to not self fertilise...; ...to improve the trait of desire* (the desired trait). Slang was fairly rare: *to be lumbered with a debilitating disease*. There were a few cases of the wrong word order giving the wrong meaning: *...grew on biotin lacking agar* [on agar lacking biotin].

Vocabulary

Word confusions were often spectacular and changed the intended meaning. One student consistently put *birth rate* for *birth weight*: *Multiple births account for a high percentage of low birth rate infants*. In each case given here, the first word is the one written, followed by what I presume was intended. Many students confused effect/affect, where/were, their/there, compliment/complement (*the gene products compliment each other*) and infected/affected (*infected with cleft lip*), infer/imply (*This data infers that...*) although I had specifically warned them in their first year about these important differences in my two initial lectures on writing scientific English.

Other word confusions included heard/herd; who/which; principle/principal; fame/frame; lead/led (made by about 20% of the students); praline (confectionary)/proline (an amino acid); less/fewer (*has less subunits*); bare/bear; to/two; to/too; ensue/ensure; dimmers (electrical devices)/dimers (pairs of molecules; several students made this error); boarder/border; formally/formerly (*Cyprus, Greece and Turkey were formally afflicted with malaria*); not/note (*to not that...*); in/into (*resulting into offspring*); septate/septa; sergeants/segregants; pre-dominate/predominant; rationale/rational; wan/want; char/chart; lay/lie (*therein lays the problem*); ripe/ripen; later/latter; rouge/rogue (*rouge genetic elements*); suffers/sufferers (*to identify suffers*); legions/lesions (*DNA-distorting legions*); callous/callose; alanine/aniline; tuber/tubes; alphabet/letter (*each chromosome was labelled with an alphabet*); down/done; produces/reproduces; rations/ratios (several students); emersion oil/immersion oil (a consistent error by several students); plain/plane; no/now; sewn/sown (*several plants are sewn together...*); scrap/scrape; master/mater; pear/pearl; souilly/solely, size/number, parental/prenatal (consistent error), sweat [peas]/sweet, shere/sphere, literary/literally (*therefor complementary genes literary complement each other*), axons/exons, rate/frequency, flab/flap, operations/operons, ladder/leader (*a ladder sequence*), decent/descent (*genes identical by decent*), occurs/incurs, pean/mean, scaring/scarring (*Surgery for cleft lip leave [sic] very little scaring*), sever/severe, council/counsel, revision/reversion, containment/contaminant, in proper/improper, sun/son (*conceive carrier females and normal suns*), wether/whether, bread/bred (*the fungus should be bread...*), fourth/forth (*back and fourth*), persuasive/permissive, boldness/baldness, base/bass, knot/knob (three students), dies/dyes [hair], confer/infer, preforming/performing, phage/page, primers/primes, hover/however, concerto/contralto, tremor/tenor, meters/metres (*two meters high*), bitch [tree]/birch, wait/weight, stains/strains, lose/loose, doner/donar, holiday/Holliday [man's name], you/use (*we can you this process...*), compactable/compatible, pallet/palate, seamen/semen (*insemination of these cows at the age of 3 with their fathers [sic] seamen*), stable/staple (*rice, the worlds stable diet*), way/weigh (*have to way up the costs*), non-evasive/non-invasive, casual/causal (*the casual mechanisms*), pores/spores, enable/unable (*Sufferers are enable to*

produce blood-clotting factor VIII), casing/causing, abhorrent/aberrant (*the reversion lead [sic] to abhorrent results*), radiate/irradiate, presents/presence (*tested for the presents of mutations*).

Some word confusions came from using the wrong part of speech, such as the noun for the verb: *to synthesis, in practise, to practice, to analysis*, observe/observer, license/licence.

The wrong preposition often changed the meaning, as in *Sickle shaped blood cells were removed from [by] the spleen. ...filtered of [off], a characteristic acquired by [from] the environment, easily deduced by [from] Pascal's triangle.*

Grammar

Bad grammar was extremely frequent for UK and overseas students, as in *It incorporate how an organisms adapt to... which are display to... eventually be reach... such matings are favour over... if used sensible it offers great benefits... they function normal and... build up melanin more rapid than... sufferers are also know to... individuals that are closer related... individual are normal predispose to... polygenes itself... a women... ...until the deleterious diseases have appeared to been bread [sic] out. In 3 different country...*

There were many, many examples of plural nouns with singular verbs and of singular nouns with plural verbs. *The answer were first found... Thus the modification of the ratios are a very important... Sequences is... The size and look of the meat is important. If the product are... The effects of selection was calculated... The style were... Environmental factors also plays... A study of twins have... Latinate endings confused the majority of the students, who treated loci (the plural of locus) and bacteria as singular: *One loci was... This bacteria was... In this genera...**

There were also wrong plurals: *theorys* (several students), *offsprings* (several overseas students), *tomatos*, *mediums* (culture media), *variety's*, *phenomenon's* (phenomena), *sufferer's*, *donkey's*.

Wrong tense were occasionally used: *In the Pharaohs era, where brother and sister mating is common practice... When species became extinct and begin to die out...*

There were wrong pronouns, relating to the wrong word in the previous sentence or even in the sentence before that: *...This was down [done] using sterile water and a centrifuge. This was incubated at 30°C. [The centrifuge was not incubated!]*

Incomplete sentences were common, and should usually have been joined by a comma to an earlier or later sentence: *Although polydactyly shows incomplete penetrance.*

Punctuation

Hyphens were often missing: *schizophrenia like symptoms; counter intuitive; non reciprocal; a wave like motion; a chromosome modifying complex.* There were very many examples of wrong apostrophes, as in non-possessive plurals: *caesarian's are becoming... but cytoplasm's do not... wheat's can form... ...are offered to mother's who have... Asian's also have... heritability's* (a consistent error), *Hindu's who*

believe... The ratio's of... Many students put *it's* for *its*, the possessive pronoun. There were many missing apostrophes (*the flys environment*) and confusion of the singular possessive and the plural, as in: *in the colonies development* [colony's]; *the bodies immune system*.

There were fairly frequent run-on sentences, where two or more grammatically complete sentences were joined just by commas: *Heterochromatisation is only observed in higher eukaryotes, lower forms such as yeast use silenced compartments to segregate active and inactive genes, in this instance gene function is lost*. Here the commas should be replaced by semicolons or full stops.

Wrong capital letters were not uncommon, especially when starting the name of a genus with a lower-case letter, or starting a species name with a capital, as in *escherichia coli* or *Escherichia Coli*. Other examples included: *enhansers* [misspelled first word of a sentence]; *The Human body...*; *... a punnet square* (Punnett); *pascels triangle* (Pascal's). Latin names, when word-processed, should be in italics, but often were not. One student consistently wrote the country as *china*.

Commas were often wrong: *The enhancer, enhances gene production by...* Semicolons and colons were rarely used, and then often incorrectly, with many students introducing lists with a semicolon. In a long typed thesis, a student consistently put a space after each hyphen, making it look part hyphen, part dash.

Spelling

Some spelling errors were completely consistent by particular students, such as *bieng* (being), *recieved*, *percieved*, *acheived*, *yeild*, *wieght*, *their* (there, as in: *Their are two main theors...*), *...over there lifespan*, *hieght*, *adanine* [adenine]. They were not "slips of the pen" or typing errors.

The huge list of errors includes: occassions, occassionally, reccessive, occurs, occur, occurance, occurence, occuring, occured, occures, posses (possess; several students), possessing, segragants, genetisists, expossed, mehtylation, feetal, sourkraut, saukraut, abbertoir, surpresses, alinement, peicing (piercing), protiens, wrinckled, gamets, suposed, complymetary, compleamentry, cuting, durring, comprimises (comprises), aquire, coppied, inducable, controll, controlling, expresion, begining, enouch, collinearly, presense, ofspring, suposed, unfortunetly, responded to, enviroment, quater (quarter), tendancy, intelligence, practicing, visable (several students), seperate and seperation (many students, consistently), equillibrium, emmigration, anilin, analine (aniline), aplied, parafin, bumbs (bumps), nob (knob), reveresible, seing, preperation, miosis, deffective, counselling, payed, sufferrers, aqeous, nuetral, ancestor, steply, indicater, reciever, immunoflourescence, back-round (background), mieosis, prelevant, disorders, percicution, sponanious, riased, leathal, susseptible, innefficient, filteration, trysosines (tyrosine), fussion, polip, acheive, didgit, nessessary, nessecary, unnessisary, visci vesa (vice versa), heamophilla (haemophilia), intergrates, hight, needd, stabalising, stryliky (strictly), a non-steryle lyne, exision, incoperated, theroies, vien, offspring, strile, seris, aberations, suger, factors, developes, whistleing, vitaligo, viltigo (consistently for vitiligo), phycosis (psychosis), scitzophrenia, schitzophernia, corrilation, habbits, disorder, benifits, beneficial, vitimin, preffered, symptoms, infinate, equil, prevalient, spontanious,

dissappearance, suspension, raised, intercalculating (intercalating), children, pollygenes, irratie (irradiate), marriage.

Some spelling errors could easily have been avoided by using the rule that one adds *ly* to the adjective to make the adverb: *usualy* (several students), *finaly*, *margianaly*, *totaly*, *visually*, *normaly*, *typicaly*.

Two words were sometimes written as one: *alot* (many students), *infact* (several students), *everyday* (*injections of insulin everyday*), *inorder*. In other cases, one word was written as two: *in organic phosphate* (inorganic); *in the mean time*; *where as*; *more over*; *where by*, *in complete* (incomplete), *some where*, *there for*, *them selfs*.

Discussion and conclusions

Errors in English were extremely frequent from these highly selected undergraduates. Spelling, word-choice, grammar and punctuation were all generally poor, often affecting the clarity or completely changing the meaning of what was written in this work, which all counted towards the final degree. There was little evidence of students having been taught the relevant rules at school, or of the students having been corrected for obvious and frequent errors. Many did not regard these errors as important.

In the essays and practical books, but not the exams, I could identify individual students and from my human diversity research on these students, I have details of their nationality, ancestry and country of birth. One cannot go by surnames, as a Cheung, Wong or Brzostek might have been born and raised here, not in China or Poland. The UK-educated students were generally poorer at English than the overseas students, although the latter made more errors in not putting an identifier (such as the definite or indefinite article) before a countable noun, e.g., *Hybrid was crossed...*, and had more non-agreeing subjects and verbs. A marker of GCSE English, quoted in the *Telegraph Weekend*, 21/7/2007, wrote: *The only correctly used colons and semi-colons were on the script of an overseas student whose native language was Cantonese.*

The students best at English were the Singapore Chinese and a Bruneian; some UK students were good, making only a few errors. The worst were UK-raised and usually of British ancestry. It is not a matter of intelligence, as the three final-year students who made the most errors obtained two firsts and an upper second class honours degree this summer; all three are UK-raised women of British ancestry.

At the Writers' Conference at Winchester in June, I spoke to the Dean of the Arts Faculty at Winchester University, who said that their arts students, including those reading English or creative writing, are generally poor at English. A writer, publisher, editor and journalist, John Jenkins, who is an external examiner for several university journalism degrees, said that standards of writing were much too low even among intending professional writers. A former student wrote to me for a reference for an MA course in journalism: her letter contained *grammer*, *recieve*, *complementary* (complimentary), *peice*, *acheived*, *correspondant*, *it's* (its), and missed apostrophes.

One hears the same story from many departments in many UK universities. This all fits with the findings in previous surveys made for and published by the Queen's

English Society: *A National Survey of UK Undergraduates' Standards of English*, B. C. Lamb (1992), and: *A National Survey of Communication Skills of Young Entrants to Industry and Commerce*, B. C. Lamb (1994). There are frequent pleas from employers, university admissions tutors and organisations like the Institute of Directors, for better education in English in schools. For example, Richard Lambert, Director General of the CBI, wrote the following in *Telegraph Business News*, 20th July 2007, page B5: *Ask business people around Britain to name the issues that keep them awake at night, and the odds are that they will put skills and training high up on the list. They will talk about widespread shortcomings when it comes to literacy and numeracy, and the need to provide what's euphemistically called remedial training even at the graduate level.*

The *Daily Telegraph*, 24/3/2007, reported that civil servants were being given lessons in English to avoid schoolboy howlers: *Bureaucrats at the Department for Education and Skills are being given crash courses in punctuation and the use of basic words amid fears that official letters and emails are riddled with errors. A series of primary school-style guides have been sent to staff, reminding them how to use the apostrophe and tell the difference between "easily confused words" such as "two", "to" and "too".* The rot thus extends from the top to the bottom in education, from bureaucrats to schools. The government and the educational establishment, including the DFES and The Qualifications and Curriculum Authority, need to be shaken out of their current complacency about standards of English by constant exposure to evidence such as that presented here from intelligent and highly-qualified undergraduates.