

Attendance

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PHAS0017

Developing Effective Communication

Lecture 2

- Article Assignment
- Clear Writing

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- Clear Writing

Article Assignment

— [Write an article for a **non-scientific** audience on the topic of 'new science' or 'science history' that interests you

— [**(1000 +/- 50)** words INCLUDING title, bibliography, footnotes, or anything else!

— [Word .doc, .docx, or pdf format

— [Include a word count

— [Filename and document text must include your full name

— [Use 12-point font, margins not less than 2.5 cm all round, single spaced

— [A marking rubric is available on Moodle (link [here](#))

— [Deadline for Moodle submission is **1st December 2018**

Drafts and Review

- [You read at least 5 articles from any (appropriate) source you choose
- [You must submit **TWO** documents - one labelled 'DRAFT' and one labelled 'FINAL'
- [You send your draft to a colleague - as arranged between you
- [You receive feedback from your colleague, do with it as you see fit
- [Submit both draft (with comments received at the end) and final version to Moodle
- [Your colleague **does not** give feedback on the final version

Drafts and Review

[At the **end of your draft**

- [Give references for at **least 5** online/print articles you have read
 - [include article names, author(s), full reference, and an online link (if online)
 - [list the **name of the PHAS0017 peer** that gave feedback on your article
 - [**copy in the feedback** you received on your article
 - [list the name of PHAS0017 student for whom **you were reviewer**
- [If you receive/give feedback from/to more than one PHAS0017 colleague, **clearly** list them all
- [Feel free to seek feedback outside PHAS0017, but **do not** include their names nor feedback
- [**Do not** include any of the above in your final article!

Drafts and Review

- [This is an exercise for YOU to understand how to critically evaluate, and apply to your OWN writing
- [You review, and have your work reviewed - so arrange to do this early with a colleague, and give feedback in appropriate format

Article Submission

[Home](#) [Events](#) [My Courses](#) [This course](#) [Staff Help](#) [Help](#)

▼ Week: 8 Oct - 12 Oct

Lectures 'Clear Writing'

Wed Oct 10, 11 am



Lecture 2: Clear Writing

Article Exercise Given Out (Due Dec 1 st 2018)

References / Materials for 'Article' Exercise



Guardian 'Science' Website



Search for the Higgs Boson: Is time running out ?



Website for 'New Scientist'



UCL News



BBC Science News



Notes on plagiarism 208KB PDF document



Marking scheme 90KB PDF document



Article Assignment Submission



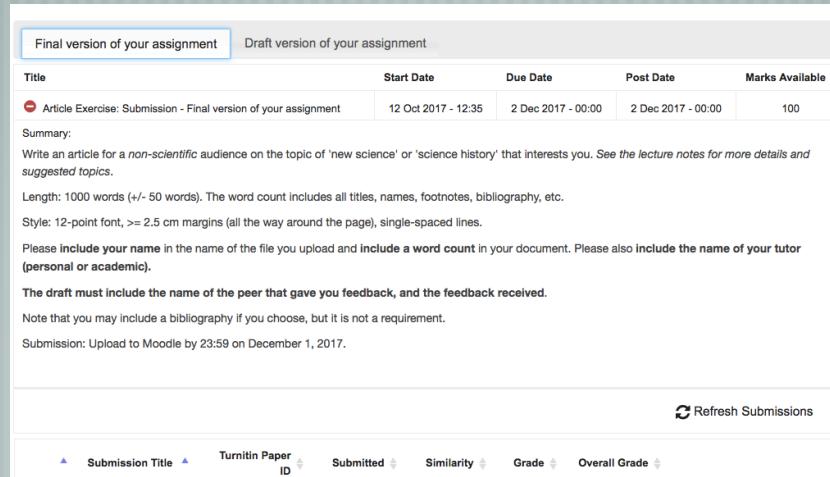
Article Submission

Check that you can access this page and upload a pdf or Word doc **NOW**

Do **NOT** wait until the deadline is approaching

Penalties for submissions that are late can be found in the UCL Academic Manual guidelines:
<https://www.ucl.ac.uk/srs/academic-manual/c4/module-assessment#3.11>

You can edit and re-submit right up until the deadline



The screenshot shows a Moodle assignment submission interface. At the top, there are two tabs: "Final version of your assignment" (which is highlighted with a blue border) and "Draft version of your assignment". Below the tabs is a table with columns: Title, Start Date, Due Date, Post Date, and Marks Available. A single row is present in the table, showing the title "Article Exercise: Submission - Final version of your assignment", start date "12 Oct 2017 - 12:35", due date "2 Dec 2017 - 00:00", post date "2 Dec 2017 - 00:00", and marks available "100". The main content area contains instructions for writing an article for a non-scientific audience, word count requirements, style guidelines, and submission notes. At the bottom of the content area, it says "The draft must include the name of the peer that gave you feedback, and the feedback received." and "Note that you may include a bibliography if you choose, but it is not a requirement." There is also a note about submission: "Submission: Upload to Moodle by 23:59 on December 1, 2017." At the very bottom of the page, there is a footer with navigation links: "Submission Title", "Turnitin Paper ID", "Submitted", "Similarity", "Grade", and "Overall Grade". On the right side of the footer, there is a "Refresh Submissions" button.

Choosing your article

- [Think about what you are interested in writing about
- [Read examples (the more the better)
- [Consider whether your topic
 - Is it interesting?
 - Will you be able to enthuse the reader?
- [Plan and draft the article
 - Structure and flow are important if you want to hold attention

Suggested websites and reading

The screenshot shows a Moodle course page with the following structure:

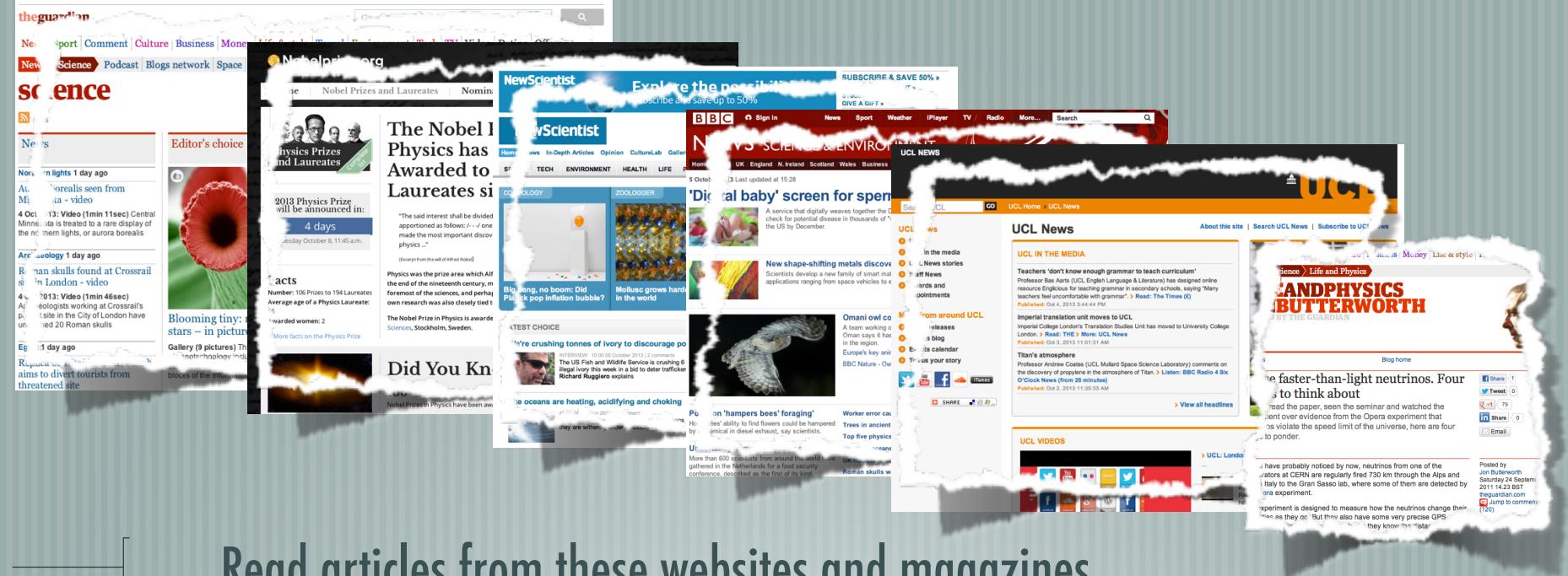
- Top navigation bar: Home, Events, My Courses, This course, Staff Help.
- Section title: Week: 8 Oct - 12 Oct
- Section content:
 - Lectures 'Clear Writing'
Wed Oct 10, 11 am
 - Lecture 2: Clear Writing
 - Article Exercise Given Out (Due Dec 1 st 2018)
 - References / Materials for 'Article' Exercise
 - Guardian 'Science' Website
 - Search for the Higgs Boson: Is time running out ?
 - Website for 'New Scientist'
 - UCL News
 - BBC Science News
 - Notes on plagiarism 208KB PDF document
 - Marking scheme 90KB PDF document
 - Article Assignment Submission

— [Read articles from these websites and magazines]

— [Are the points clear? Concise? Are you enthused? Will you remember it?]

— [Did it provoke thought or conversation?]

Suggested websites and reading



Read articles from these websites and magazines

Are the points clear? Concise? Are you enthused? Will you remember it?

Did the article provoke thought or conversation?

Example Articles

Home Events My Courses This course Staff Help

Week: 8 Oct - 12 Oct

Lectures 'Clear Writing'
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Lecture 2: Clear Writing

Article Exercise Given Out (Due Dec 1 st 2018)

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- Marking scheme 90KB PDF document
- Article Assignment Submission



Example Articles

A Taste of Entropy

Entropy is one of the few scientific concepts which have gradually acquired a certain fame in the general public. For instance, in "Whatever works", the Woody Allen film, a charming blonde is suddenly heard proposing a definition of toothpaste back in the tube" (quoting loc. definition, it does point out to two things complex physical concepts with their part in the evolution of physical systems, which

In a nutshell : entropy is practically the difference between past and future, and r

Now, firstly, a preliminary observation is all of physics ignores the difference between "symmetrical", meaning that the laws they In other words, nothing in their equations they all lack a "time arrow".

And this is where the Second Law of Thermodynamics comes in. The entropy of an isolated system tends to a maximum. We can assume our Universe, as a whole, is isolated, so it must end up with less entropy to one with maximal entropy.

Why does water expand when it freezes?

Since science lessons at school, we have been taught a simple model for molecules in solids, liquids and gases. The classroom demonstration – having to run around colliding with each other to represent gas molecules, getting closer together as a liquid, and packed tightly as a solid. Applying this concept to water, we should expect it to contract when frozen, as it becomes solid. In this case, why do icebergs float on the surface of the sea? Why do pipes burst when it's freezing?

Actually, when cooled, a given mass of

molecules arrange when frozen. Oxygen has extra electrons which 'repel' the two bonds, making the bond angle smaller.

All elements also have a property known as 'electronegativity'. Electronegativity describes the tendency of an atom to attract electrons in a bond. In the case of water, Oxygen is more electronegative than Hydrogen; the electrons are drawn slightly more towards the Oxygen and away from Hydrogen in the O-H bond (see Figure 1).

Subject Matter

- Your courses will be introducing you to many new topics and concepts
- Pick one in plenty of time so that you can
 - consider if it is appropriate
 - research it
 - plan the draft and how you will present it
 - ask people to read it and give you **feedback**
 - evolve the draft

Potential Topics

- [The Uncertainty Principle
- [We are all made of stardust
- [Schrödinger's cat
- [Wave-particle duality
- [Black holes
- [The quantum world
- [The Large Hadron Collider
- [Time dilation
- [Why planes stay up
- [The photoelectric effect
- [Determining the age of the universe
- [Tides
- [How CCDs work
- [Special relativity
- [The aurora borealis
- [How do you measure temperature in space?
- [The Big Bang
- [The Big Crunch
- [Why the sky is blue
- [Chaos theory
- [Nuclear fission
- [The Maxwell-Boltzmann distribution
- [Fundamental particles
- [Why the sky is dark at night
- [String theory
- [Quantum entanglement

Potential Topics

- [Fibre optics
- [Gravity
- [Nuclear fusion
- [The death of our sun
- [Exoplanets
- [Controlling the temperature of a satellite
- [Why a boomerang comes back
- [Cyborg – Fact or Fiction?
- [Magnetic Resonance Imaging
- [Nobel Prize winners
- [...or anything else you like!

1000 words is not a lot

When I look up at the night sky I no longer see stars as just specks of light decorating the night sky; I see living phenomena that have provided the very foundations of our existence. Stars live and die, just like you and me. Like people different stars live different lives. The most exciting life story is that of the biggest stars, those more than eight times the mass of our sun.

At the start of the universe there were just huge amounts of dust and gas. This gas was mainly hydrogen. The dust and gas formed giant clouds. Some clouds were so massive that due to gravity they started to collapse. All of the gas and dust was compressed together. In the centre it started to get really hot. The star was born when the centre of the cloud was hot enough for hydrogen to ignite and start to burn.

Hydrogen burning in a star is not the same as the burning of coal in a fire. For one thing it is much hotter, at the centre of the sun it is about fifteen million degrees centigrade, which is about thirty eight thousand times hotter than it was in Rhodes last year where we all got sunstroke. Hydrogen burning is the name given to the nuclear reactions of hydrogen in a star. The hydrogen "burns" to form helium, the next element in the periodic table. During this process high amounts of heat energy and light are released. This is what most of the stars that we see in the sky are doing today.

Eventually the hydrogen runs out and the star begins to die. It doesn't just go out like a candle though. Firstly the star expands outwards, greatly increasing in size. In the centre of the star it is still very hot. Hot enough that now the helium starts to burn. It forms other elements like carbon, oxygen, silicon and iron. Suddenly the star becomes unstable. The elements stop burning. Energy stops being produced. The star can no longer hold itself together. It explodes. Blowing itself apart. The star has died.

All of the elements that the star has produced have now been spread into the universe, instead of just hydrogen gas there is oxygen and carbon along with many others. They then form new clouds and the process starts again. New stars are born which produce more gases, then new planets form and eventually when the conditions are right the elements created by the stars form the basis of life.

So, the stars produced all of the life giving elements and spread them into the universe. You could really say that we are all just star dust.

Word count: 450 words

PHAS0017

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Clear writing: what we are looking for

Clarity:

- **Structure** – a natural ‘build-up’ of ideas / story
- **Writing** - grammar, spelling, logic (UCL has resources, should you need them, if English is not your first language)
- **Conciseness** - is my explanation clear enough ? Am I using unnecessarily complex words or phrases ?

Conciseness

Unnecessary verbosity should be avoided

As a bit of an extreme example, take twitter - communicating through 140 characters at a time

Home Connect Discover Me Search

Tweets

Following

Followers

Favorites

Lists

Tweet to BBC Breaking News
@BBCBreaking

Photos and videos

Who to follow · Refresh

Secularism UK @NatSecSoc Follow

Physicist Pat @physicist13 Follow

Rationalist UK @RationalistUK Follow

BBC NEWS BREAKING BBC Breaking News @BBCBreaking 29m Irish Republic referendum result: 51.7% vote to keep Seanad Eireann (parliamentary upper house), rejecting govt plans bbc.in/192Jr9s Expand

BBC NEWS BREAKING BBC Breaking News @BBCBreaking 39m The Irish Republic votes in favour of keeping its upper house of parliament in a very close referendum bbc.in/15clw87 Expand

BBC NEWS BREAKING BBC Breaking News @BBCBreaking 3h Four men believed to have carried out the deadly mall attack in Nairobi last month are named by the Kenyan military bbc.in/15c2EWR Expand

Clear writing: what we are looking for

Suitability:

Audience – ...

Content -

Level -

Style:

Logic, flow, use of words –

Clear writing: what we are looking for

— [Accuracy:

— Numbers –

— Equations & how to handle them -

— Quantitative information where possible -

— [Literacy:

— Grammar, spelling, punctuation -

Think about the reader



The reader for whom you write is just as intelligent as you are, but does not possess *your* store of knowledge. He is not to be offended by a recital in technical language of things known to him (e.g. telling him the position of the heart and lungs and backbone).

He is not a student preparing for an examination and *he does not want to be encumbered with technical terms*. His sense of literary form and his sense of humour is probably greater than yours.

Shakespeare, Milton, Plato, Dickens, Meredith, T.H. Huxley, Darwin wrote for him. None of them are known to have talked of putting in “popular stuff” and “treating them to pretty bits” or alluded to matters as being “too complicated to discuss here”. If they were, they didn’t discuss them there and that was he end of it!

H. G. Wells to Julian Huxley

Abstraction and analogy

- [How would you explain a complex or simple physics topic or concept to a friend or relative?
- [Analogies based in the familiar ('zone of proximal development')

Some examples

Wave Particle Duality

Imagine that you're paddling along a quiet beach; the little waves are lapping on the sandy shore. Then, without warning, one of the waves “bunches” and rears up, and knocks you flat. You'd be amazed.

Now imagine that you're setting up the pool balls for a game and one suddenly smears out across the table and disappears down two of the pockets simultaneously. You'd wonder if you were hallucinating.

That sort of thing does not happen in the world of everyday experience - well, not often. But in the strange world of quantum physics, it happens all the time.

It's called “wave-particle duality”.

The Basics

— [Clear writing shows which subject goes with which verb

— [Consider the exaggerated example:

— “When out shooting, elephants should be avoided”

When out shooting, elephants should be avoided



'Dangling' modifiers

— [A modifier 'dangles' when what it modifies is missing or misplaced in the sentence

— Jogging across the busy street, a truck almost hit me.

— [Repairs:

— Jogging across the busy street, I was almost hit by a truck.

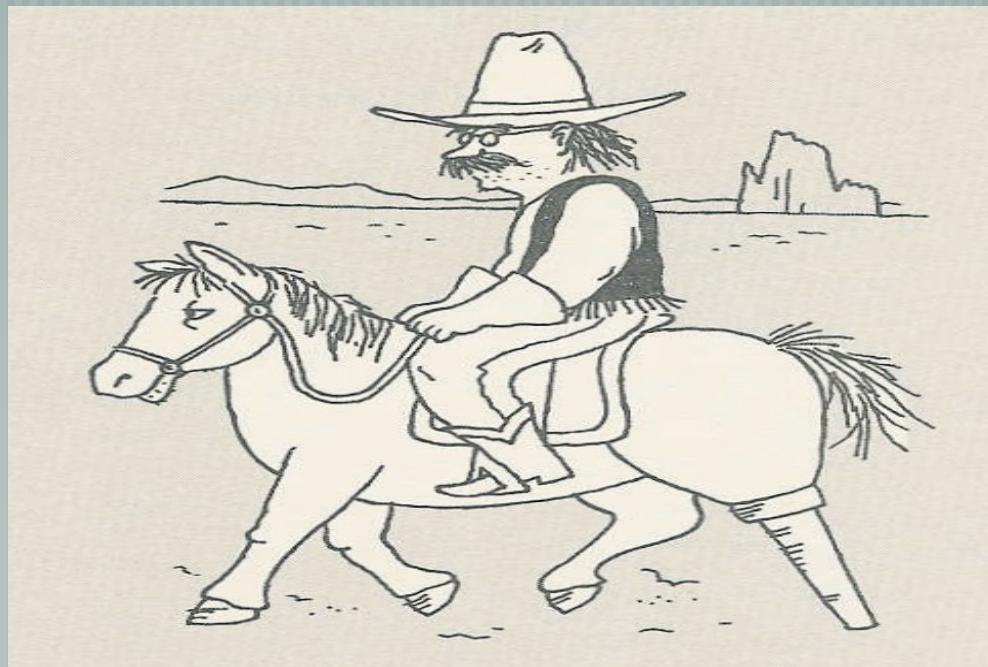
— As I jogged across the busy street, a truck almost hit me

Misplaced modifiers

I saw a man on a horse with a wooden leg

Misplaced modifiers

I saw a man on a horse with a wooden leg



Check, and have others check, your writing

- [Look critically at what you have written to make sure that any such ambiguities are resolved
- [Academics are not exempt! Colleagues often ask each other to read and check their writing. Feedback is extremely useful if taken constructively.
- [Publishing articles in scientific journals involves review of your writing by your peers

More examples

— [She told him that she wanted to marry him frequently.

— Rather:

— She frequently told him that she wanted to marry him.

— [The seminar is designed for adolescents who have been experimenting with drugs and their parents.

— Rather:

— The seminar is designed not only for adolescents who have been experimenting with drugs, but for their parents as well.

Order

- Word order is an indication of meaning in the English language. Thus it's important to place modifiers where they convey the intended meaning.
- You should not rely on the context to resolve ambiguities in writing.

Two further points

[Punctuation IS important

- Can change the meaning of a sentence
- [Lynne Truss: "Eats, shoots and leaves"]
- 'Usage and Abusage: A Guide to Good English' by Eric Partridge is an excellent source of information about 'ambiguities' in grammar and meaning of words (Penguin paperback)

[Make sure it's your own work

- You won't learn if it's someone else's.
- UCL has a strict policy regarding plagiarism
 - <http://www.ucl.ac.uk/current-students/guidelines/plagiarism>

Common Problems

- [Three slides of the most common problems
- [Keep these in mind as you plan and write
- [Run through your finished article before final submission to check you have not fallen foul of these

Common Problems - I

- [Choice of topic not very challenging, e.g. obvious properties of $F=ma$
- [Ambiguous and unattached pronouns.
 - Is it clear what the subject or object represented is? c.f. the last one specified
 - Exercise: ask what each 'it', 'this', 'that', 'them', etc refers to. Is it clear and unambiguous?
- [Long sentences. 'Run ons' – sentences containing more than one idea, separated usually by commas.
 - Think about the ideas on both sides of commas. Would a full stop, colon or semicolon be better?
 - Beware 'streams of consciousness'. Splitting sentences into two can often improve clarity and impact.
- [Parentheses can disrupt reading flow. Too many 'post' explanations (in brackets or not) suggest imperfect planning/organisation of material
- [Unexplained technical terms will lose a non-scientific audience.

Common Problems - II

- [Good ideas can be spoiled by poor or confused writing
 - Careful editing can improve clarity. Get the words down, then look again and edit.
 - Look at each sentence: be sure it says what you want it to say and that the ideas in it follow on from what was said in the previous sentence. If a sentence relies heavily on information from preceding sentence, use of a semicolon ; may be appropriate.
- [Too many short paragraphs can be indicative of poor organisation of material and/or ideas. Each paragraph introduces and ‘develops’ one, maybe two, main ideas.
- [Number conventions
 - Usually small numbers (say 1-10) should be written as letters in the text
- [Use of comma, colon, semicolon
- [Its and it’s (possessive and ‘it is’).
- [Use of too many exclamation marks!

Common Problems - III

— [Think about sentences:

- Does this one say what I want it to?
- Does it contain one main idea?
- Does it follow on naturally from the previous sentence?
- Is it too long?
- Is the punctuation consistent with what I want it to say? 'Run ons'?

— [Care in the use of 'predictive' spell checkers

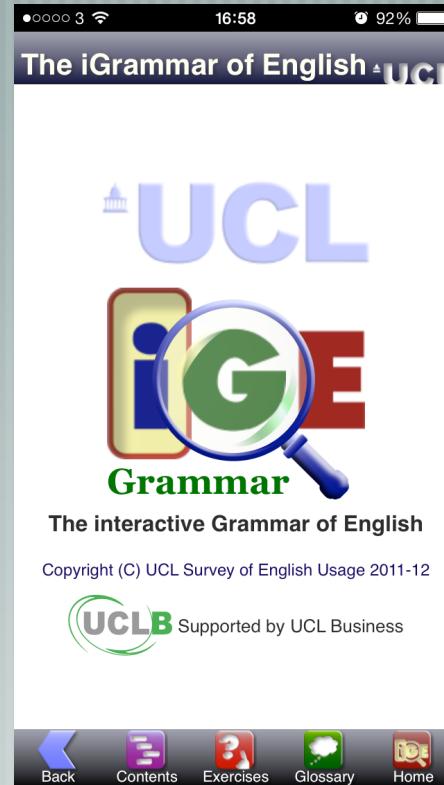
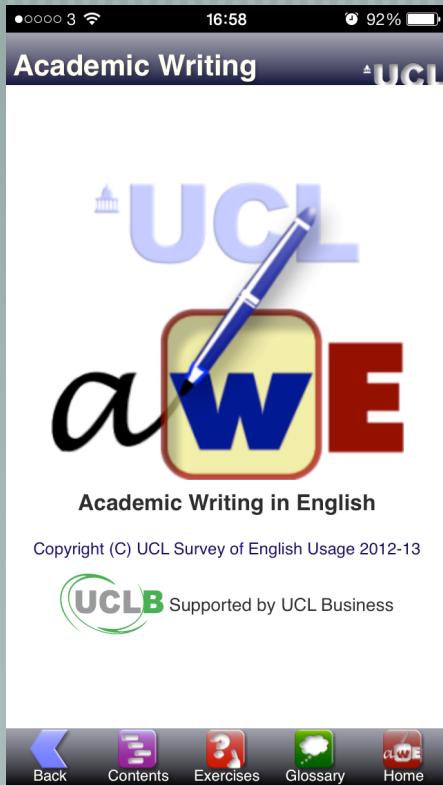
— [**Read through the piece before submitting it to pick up such problems**

— [**Ask a friend to read it; it is very easy to overlook our own mistakes!**

Resources to help with writing

- [Writing fellows at UCL and personal tutoring (see Lecture 1)
- [UCL language support: <http://www.ucl.ac.uk/language-centre>
- [Library and online resources, including the PHAS0017 Moodle pages
- [UCL Apps...

Resources to help with writing



Remember...

“Those who write clearly have readers; those who write obscurely have commentators”

Albert Camus, Nobel laureate

Remember...

“If people cannot write well, they cannot think well, and if they cannot think well, others will do their thinking for them”

George Orwell

Finally

— [MAKE ARRANGEMENTS WITH A COLLEAGUE FOR THE FEEDBACK AND REVIEW PARTS OF THIS EXERCISE

— [CHECK YOUR PHAS0017 MOODLE ACCESS AND ASSIGNMENT SUBMISSION

— [Moodle key: **12P1901**