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Academic Writing in English for Students of Physics

LECTURE 1 – ELLEN TURNER



Your task

- Write and submit a text of 1500 words in length, written in formal academic English
- 2 possible topics:
 - A. “The motivation for your scientific thesis work”
 - B. “The contents/meaning/impact/philosophical implications of quantum mechanics in the modern world”
- Submission deadline: 16 October at midnight
- Individual comments will be available by 27 October



Your task

- Produce an essay, not an excerpt from your thesis or a diary entry
 - Intro including the aim
 - Body including the arguments
 - Conclusion summarizing what was discussed
- These are necessary components of an essay. Even if you choose not to have sections in a short essay such as this, you still need to organize your thoughts and arguments according to this.
- References are mandatory



Submission instructions

- Send your text via email to ellen.turner@englund.lu.se
- Submit your text **on the 16 October only**
- **Send your text in .doc(x) format**
 - **.odt, .rtf, .pdf or .pages documents will be returned for conversion**



Today's lecture: Structuring your ideas

- Audience and purpose
- Structure
 - The basic essay structure
 - IMRaD and its alternatives
 - The introduction
 - Paragraphs
- Style
 - Levels of formality
 - The active and the passive



Guidelines for better writing



What makes a good writer?

“A text is a machine to think with.”

Adapted from I. A. Richards



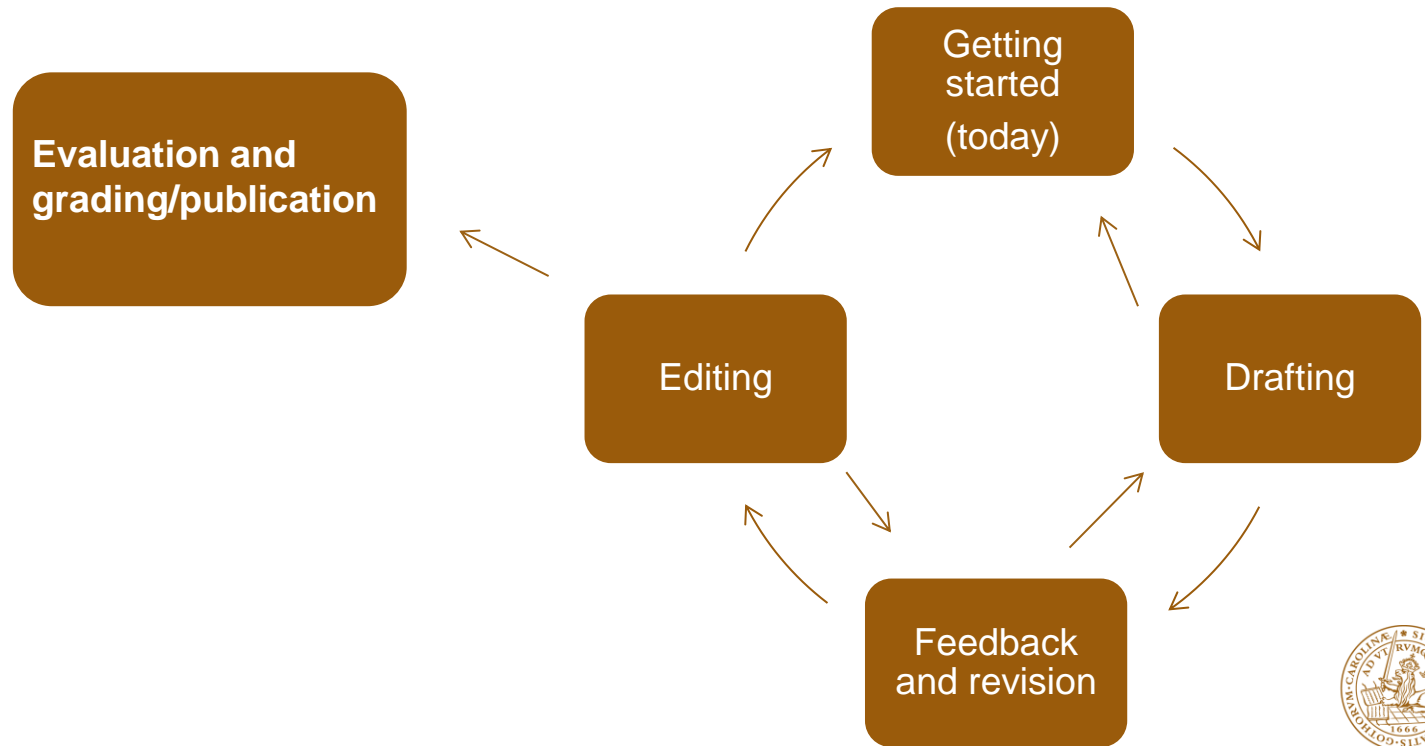
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Basic principles

Clear writing starts with clear thinking

- Before you start writing, ask:
“What am I trying to say?”
- When you finish writing, ask:
“Have I said it?”

The writing process



Basic principles

Planning is key

- Bullet point list of main ideas
 - each idea will become a single paragraph
 - ideas should be formulated as simple declarative statements: these will be the topic sentences of your paragraphs
 - organize your ideas into sections



Find a planning technique that works for you



Audience and purpose





What is rhetoric?

- Challenging rhetoric as trickery/persuasion?
- The rhetorical situation
 - Any communication with the goal of modifying the perspective of another

In short, rhetoric is a mode of altering reality, not by the direct application of energy to objects, but by the creation of discourse which changes reality through the mediation of thought and action. The rhetor alters reality by bringing into existence a discourse of such a character that the audience, in thought and action, is so engaged that it becomes mediator of change. In this sense rhetoric is always persuasive. (Lloyd F. Bitzer)



The rhetorical turn



Audience and purpose

- Who are you writing for?
- How will you be persuasive?

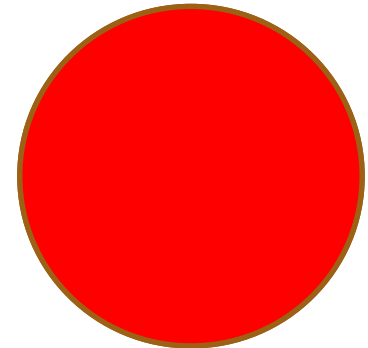


What does argument mean in physics?

Do you consider writing in physics to be argumentative in nature? Why (or why not)? What does argument mean to you (in an academic writing sense)?

**5
minutes**

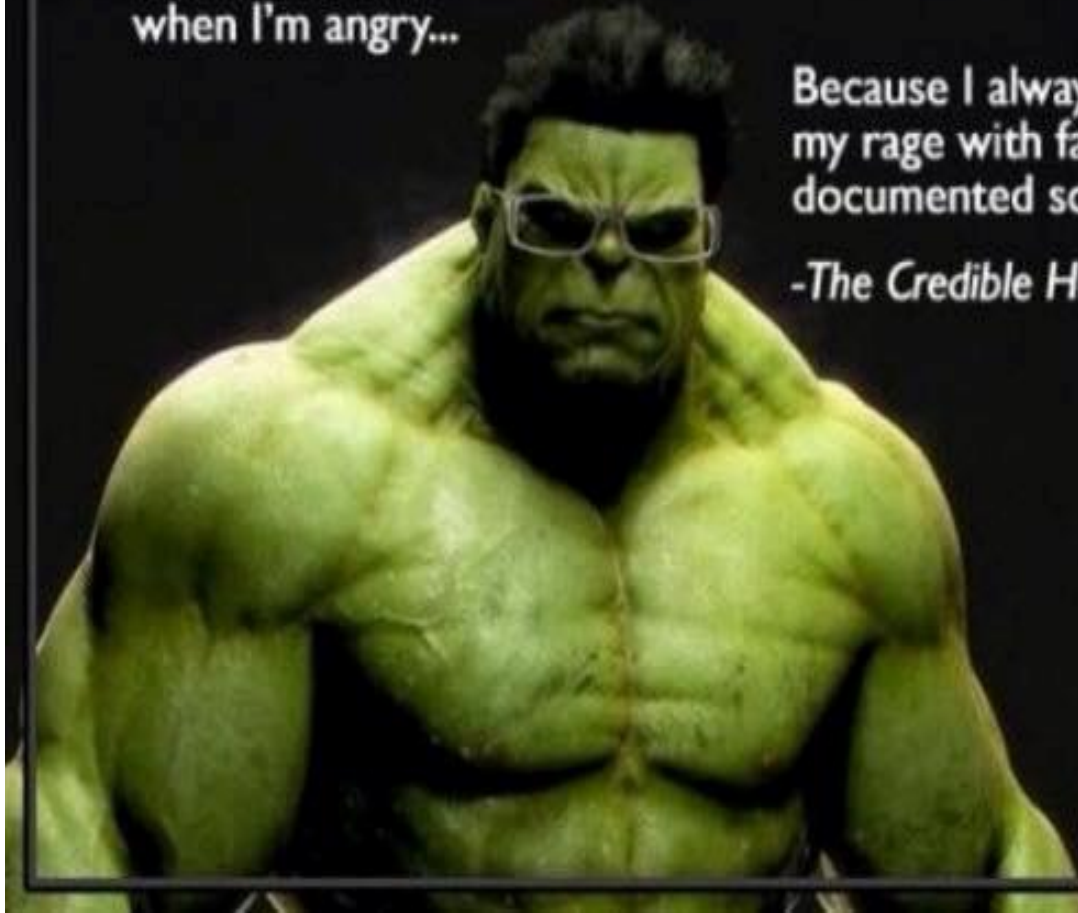
Share your thoughts



You wouldn't like me
when I'm angry...

Because I always back up
my rage with facts and
documented sources.

-The Credible Hulk



<http://credible-hulk.tumblr.com/>



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Essay structure



Structure

The 'hourglass model'

Introduction



general



particular

Procedure



particular

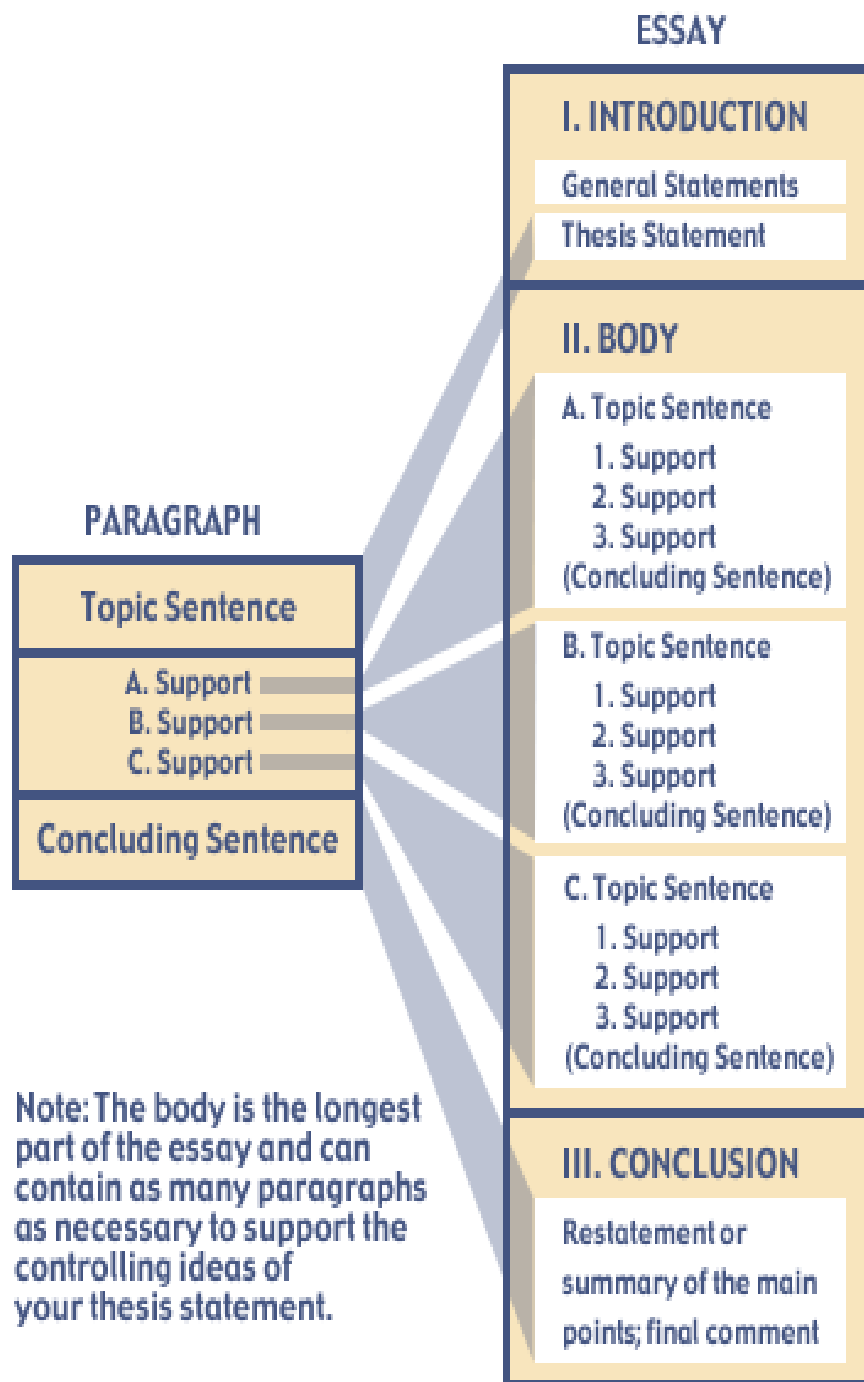


Discussion



general





From:
<http://mycourse.solent.ac.uk/mod/book/view.php?id=2735&chapterid=1787>



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IMRaD and alternatives

- Introduction
- Methods
- Results
- Discussion



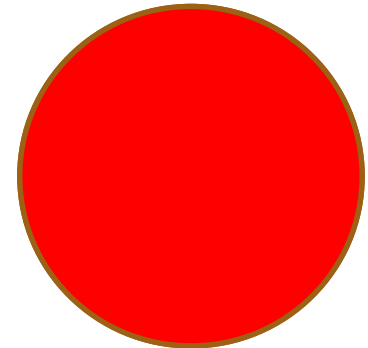
The introduction



What makes a good introduction?

Brainstorm in pairs

**5
minutes**

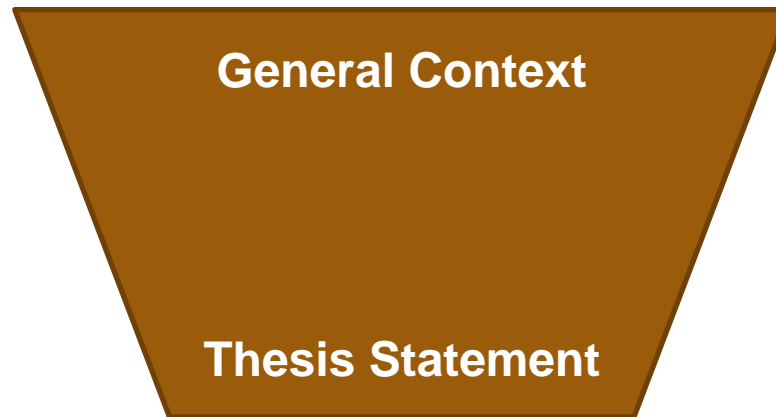


An good introduction should...

- Introduce the topic of the essay and state why it is important
- Briefly introduce contextual and relevant background information
- Mention previous work on the subject
- Highlight a problem or gap in knowledge
- Suggest how it will solve this problem or fill this gap
- Contain the thesis statement
- Describe the structure and organisation of the essay



The shape of the introduction



Thesis statements

- Sums up the central claim of your essay
- Should be contestable
- An answer to your research question(s) that is not obvious and needs to be argued for
- Contained within one sentence (usually)
- Possibly suggests a structure for your essay
- All subsequent claims in the body of your essay should be contributing to supporting your overall thesis



Example thesis statements

Not contestable:

- Pollution is bad for the environment.

Too broad:

- Drug use is detrimental to society.

More focused:

- Illegal drug use is detrimental because it encourages gang violence.
- America's anti-pollution efforts should focus on privately owned cars because it would allow most citizens to contribute to national efforts and care about the outcome.

Adapted from: <https://owl.english.purdue.edu/owl/resource/588/01/>



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Indicating the thesis statement

This paper contests the claim that

The central thesis of this paper is that

In this paper I argue that

In the pages that follow, it will be argued that

This paper attempts to show that

In this essay, I attempt to defend the view that

Example taken from: <http://www.phrasebank.manchester.ac.uk/introducing-work/>



Claiming centrality

X is fundamental to ...

X has a pivotal role in ...

Xs have emerged as powerful platforms for ...

X is essential for a wide range of technologies.

X is a classic problem in ...

A primary concern of X is ...

X is a fundamental property of ...

The concepts of X and Y are central to ...

Investigating X is a continuing concern within ...

X is a major area of interest within the field of ...

X has been instrumental in our understanding of ...

Central to the entire discipline of X is the concept of ...

X is an increasingly important area in applied linguistics.

Examples from “Introducing work.” *Manchester University Academic Phrasebank*,
www.phrasebank.manchester.ac.uk/introducing-work. Accessed 20 March 2017.



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Purpose statements

The specific objective of this study was to ...

An objective of this study was to investigate ...

This study set out to investigate the usefulness of ...

This case study seeks to examine the changing nature of ...

The objectives of this research are to determine whether ...

This prospective study was designed to investigate the use of ...

This research examines the emerging role of X in the context of ...

This study systematically reviews the data for..., aiming to provide ...

Drawing upon two strands of research into X, this study attempts to ...

This study therefore set out to assess the effect of X ..., and the effect of ...

The main aim of this study is to investigate the differences between X and Y.

Part of the aim of this project is to develop software that is compatible with ...

There are two primary aims of this study: 1. To investigate ... 2. To ascertain ...

This study seeks to obtain data which will help to address these research gaps.

One purpose of this study was to assess the extent to which these factors were

Physics examples

- In this article, we examine the relation between braid and exclusion fractional statistics of particles moving in a straight line, including chiral cases.
- The first contribution of this paper lies in formulating a [...] The second contribution is to derive [...]
- The purpose of this article is to explain key features of the data in Fig. 1 in terms of introductory physics and to use Fig. 1 to make back of the envelope estimates of the parameters quoted in the preceding paragraph.
- I outline here possible geometric treatments of both special and general relativity, the former based on hyperbolic trigonometry, the latter on differential forms.



Structure

The 'hourglass model'

Introduction



general



particular

Procedure



particular

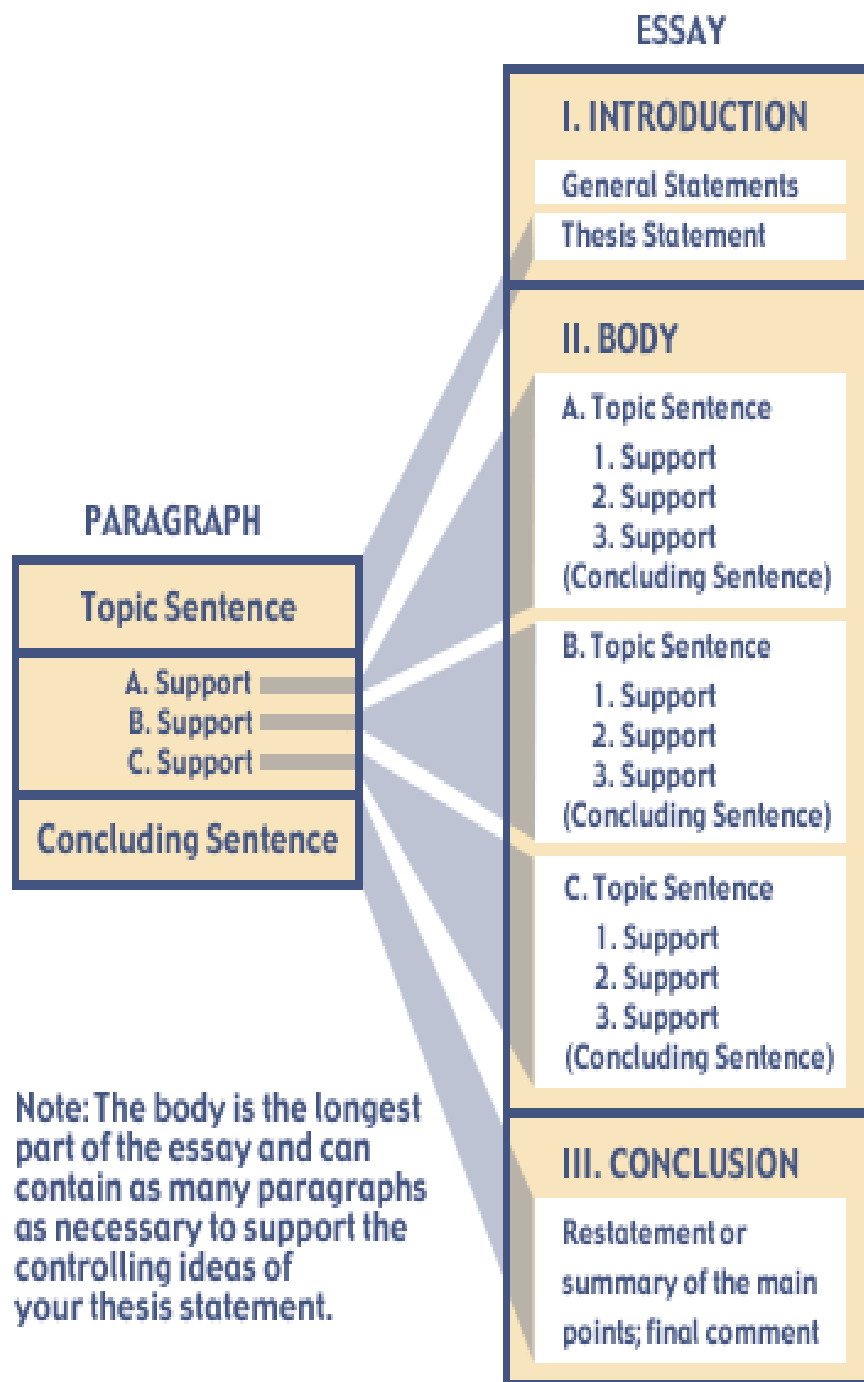


Discussion



general





From:
<http://mycourse.solent.ac.uk/mod/book/view.php?id=2735&chapterid=1787>



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The paragraph



Eu sint discere sea, modus nostro vocibus ex vel. Eimod blandit constituto pri ei, et graece accusamus quaerendum vel, congue dissentiet adversarium ne mel. At feugiat quaerendum neglegentur vim, sea ei aperiri commune delicatissimi. Nostro fastidi nominati ho qui, o miferisarchum et eum. No mea nisi idque, ea vido choro consequat vim. Ad mel omnis ipsum moderatus, eos erem adipisci consulu te. Vjs summo dicit eu. Usu tibi que appellatur voluptatibus id, cum primis intellegebat ne. Ut vel fugit malorum antiopam, pri aliquam i ea pro et illum eusmodi ornatus. Per alia legends petentium in, et vis facilis corrupti, animal ad sit. Eum ea ferri omnesque comprehensam, an eam opton integre lobortis vidisse adlores id has. Quo ne viris aliquando, his id noster aliquid eloquentiam. Possim utamur ne, cum sint utamur medicocritatem no. Sit ut case vidisse reprimique magna britani ullamcorper. Et eum vero quidam appellantur, dicant habemus invenire est i laboramus dissentiet, falli oratio at quo, sale salutandi quo in. Detracto consequuntur duo proprie delicatissimi no. Omnis ubique malisset ex qui, in graece mucus definitionem vidit malis democritum quo. Sit primis delectus atomorum te, aperian quaerendum vi ignota consequat cum. Eam visi animal cotidieque id, quas salutandi qui ad. Rebum per no. Velit lobortis ius ad. Explicari definiebas an duo. Oratio honestatis eum ex, est delectus. Has an modo purto. Ne purto liber graeco nec, ne mel dolorum recusabo. Sea e tempor, sed mutat novum cu. Et nec erem minimum, ea mei munere eleifend. Eu i imperdiet sed, eros vulputate quo in, vix nemore menandi ei. Ne pro consulu guberg videri nonumes an nam. Ex eum suas fugi, ne admodum fierent peripit sit. Et medicocritem in, ius id nibi taton interesset, minim nostrud nec ne. Vix omnesque conceptam in. Ut his enim malisset reformidans, an mei civibus perpetus, eae posidonium te. Mea omnium voluptatibus ad. Malis sadsipiscing cum an, eos cu luclius pl tractatos, nam justo audiam persecti ex. Ea nam justo tollit salutandi, pro impetus mode Has ei tamquam explicari sadsipiscing, nec vidit eligendi constituto an. Vim dico dictas ex, homero no. Cum nisi facilis te, phaedrum recusabo ea est, pro ex quis saepe. Nec vel vituperatoribus ei, in ornatus praesent consetetur eum, mei modo quaestio dignissim ac elit mucus elaboraret, ne mei dolorum torquatos. Nemore alterum vel ei, eu eleifend c quo. Vixi malisset qui ut, quo labore graeco venear ne, vel et soluta perlinada, assentior eu qui, Assum tamquam delectus usu et, vitae utinam maiorum cum no, sed id voluptatum. Sed ea solum alterum delectus, ex quod utamur blandit ius. Ne has nulli phaedrum, ut mei tollit veniam dignissim. Legimus appellere eos no. Cetero expellenda ut: usu at. Sea ad dicant evertitur, eos ex audire inermis malisset, per congue dictas ne. Et e nonumy nec, auge audire evertitur sit cu. Illum populo dolores his at. Aequa utinam cu i id eimod occurreret. Duo aequa oportet id, et has elit oratio delectus. Ex probo medicocritem pri, ea sit diceret deterruisset. His praesent splendide an, cu alterum detracto per. Oportet inductum prodesse has an, has ex eripuit principes posidonium. Et ius meliore adipiscing, est an paulo iuvaret effluantur. Ad malorum vulputate pro, amet singulis quo dictas persius equidem ei. Eum sonet nostrud temporibus et, usu ad alterum platonem vi vidit theophrastus mel ad, vel fabellas temporibus eloquentiam ad. Eu oratio tacimates quo fastidi liberavisse, ad taton eripuit delicata sea. Agam nobis periculis vim ei. Eam ea adipisci, eum amet dolorum ei. Vix ei atqui phaedrum, eum tale posse efficiendi te, per movet minimum.

Eu sint discere sea, modus nostro vocibus ex vel. Eimod blandit constituto pri ei, et graece accusamus quaerendum vel, congue dissentiet adversarium ne mel. At feugiat quaerendum neglegentur vim, sea ei aperiri commune delicatissimi. Nostro fastidi nominati ho qui, corrupti miferisarchum et eum. No mea nisi idque, ea vido choro consequat vim. Ad mel omnis ipsum moderatus, eos erem adipisci consulu te. Vjs summo dicit eu. Usu tibi que appellatur voluptatibus id, cum primis intellegebat ne. Ut vel fugit malorum antiopam, pri aliquam i ea pro et illum eusmodi ornatus. Per alia legends petentium in, et vis facilis corrupti, nemore animal ad sit. Eum ea ferri omnesque comprehensam, an eam opton integre lobortis, postea vidisse adlores id has. Quo ne viris aliquando, his id noster aliquid eloquentiam. Vix dicit possim utamur ne, cum sint utamur medicocritatem no. Sit ut case vidisse reprimique, sea ne magnatritani ullamcorper.

Et eum vero quidam appellantur, dicant habemus invenire est ut. Pri ne laboramus dissentiet, falli oratio at quo, sale salutandi quo in. Detracto consequuntur duo eu, eum proprie delicatissimi no. Omnis ubique malisset ex qui, in graece mucus definitionem sea, ne vidit malis democritum quo. Sit primis delectus atomorum te, aperian quaerendum vim ei. No ignota consequat cum. Eam visi animal cotidieque id, quas salutandi qui ad. Rebum pericula vix no. Velit lobortis ius ad. Explicari definiebas an duo. Oratio honestatis eum ex, est an solit delectus. Has an modo purto. Ne purto liber graeco nec, ne mel dolorum recusabo. Sea eu consul tempor, sed mutat novum cu. Et nec erem minimum, ea mei munere eleifend. Eu appareat imperdiet sed, eros vulputate quo in, vix nemore menandi ei. Ne pro consulu gubergren, alia viderer nonumes an nam. Ex eum suas fugi, ne admodum fierent peripit sit. Eos altera medicocritem in, ius id nibi taton interesset, minim nostrud nec ne. Vix omnesque conceptam in. Ut his enim malisset reformidans, an mei civibus perpetua, eam primis posidonium te. Mea omnium voluptatibus ad. Malis sadsipiscing cum an, eos cu luclius phaedrum tractatos, nam justo audiam persecti ex. Ea nam justo tollit salutandi, pro impetus moderatus in. Has ei tamquam explicari sadsipiscing, nec vidit eligendi constituto an.

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“The paragraph *break*: a visual bookmark that allows the reader to pause, take a breather, assimilate what he has read, and then find his place again on the page”

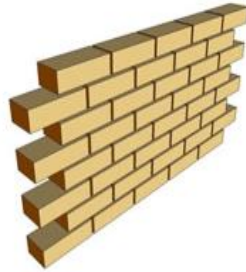
Pinker, S. (2014). *The Sense of Style: The Thinking Person's Guide to Writing in the 21st Century*. Penguin. London (p.145).



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Paragraph



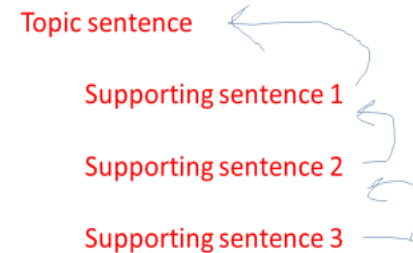
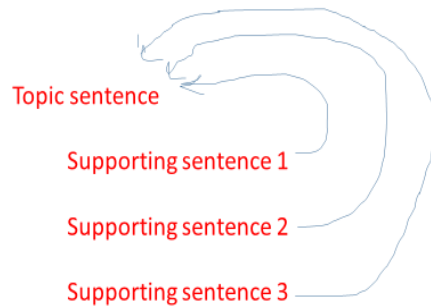
Essay



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Topic sentences and supporting evidence

Each brick has its own internal architecture



Paragraphing

The effects of an incipient crack on the dynamic behavior of a beam has been of great concern for structural health monitoring applications [1,2]. Among them, it is well-known that the modal frequencies of a cracked beam decrease compared to those of an intact one because the crack reduces the stiffness of a beam. The previous studies have reported that the changes of the lower-mode frequencies are very small due to an incipient crack because the lower frequency global modes of a beam with long characteristic wave lengths tend to be insensitive to local damage [3,4]. Since the size of damage that can be detected from changes in system dynamics is inversely proportional to the frequency range of excitation, higher mode frequencies become more sensitive to the incipient crack of a beam[4]. Therefore, it is very important to predict modal frequency changes associated with relatively higher modes for assessing the incipient crack of a beam.

Adapted from: Park, Hyun Woo. "A simplified frequency equation and its approximate solution of a beam with an incipient crack from a wave perspective." *Wave Motion* (2017).



The proposed technique consists of three stages. Firstly, a coarse representation of moving edges is computed. Secondly, that representation is filtered given rise to an image only containing those objects moving with a speed higher than the camera's capture rate. Finally, these two stages are applied iteratively in order to extract all the moving objects present in the current frame.

Sappa, A. D., & Dornaika, F. (2006). An edge-based approach to motion detection. In *Computational Science—ICCS 2006* (pp. 563-570).

COMMON PATTERNS FOR STRUCTURING INFORMATION

- **General-to-specific**
- **Specific-to-general**
- **Problem-solution**
- **Sequence or chronology**
- **Cause and effect**
- **Comparison/contrast**



- cause and effect
 - *X and Y are important driving factors of Z.*
- chronology
 - *To begin this process, ...*
The first step in this process was to ...
- comparison and/or contrast
 - *X is different from Y in a number of respects.*

Verb to noun: nominalization

Verbs (actions) into nouns (things, concepts)

For example:

Verb	Noun
We were able to reproduce the results exactly.	The exact reproduction of the results enabled...
This was caused by...	The cause of this was...
It is important to consider...	Considerations of X are important.
The results were analysed.	This analysis led to the conclusion that...



Verb to noun: nominalization

In the case-control study, SIDS was significantly **associated** with sleeping in the prone position, as compared with other positions (...) (2) The strength of **this association** was increased among infants who slept on natural-fiber mattresses (...)

(Ponsonby et al., 1993:337) quoted in Galve 1998:378)



Helen Sword on zombie nouns...

Take an adjective (*implacable*) or a verb (*calibrate*) or even another noun (*crony*) and add a suffix like *ity*, *tion* or *ism*. You've created a new noun: *implacability*, *calibration*, *cronyism*. Sounds impressive, right? ... Academics love them; so do lawyers, bureaucrats and business writers. I call them “zombie nouns” because they cannibalize active verbs, suck the lifeblood from adjectives and substitute abstract entities for human beings.

http://opinionator.blogs.nytimes.com/2012/07/23/zombie-nouns/?_r=0



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- The *proliferation* of *nominalizations* in a discursive *formation* may be an *indication* of a *tendency* toward *pomposity* and *abstraction*.
- Writers who overload their sentences with *nominalizations* tend to sound pompous and abstract.

What's next?

- Two possible essay topics:
 - a) “The motivation for your scientific thesis work”
 - b) “The contents/meaning/impact/philosophical implications of quantum mechanics in the modern world”
- Send it to ellen.turner@englund.lu.se
- Write your name both in the text and in the file name
- **Essay submission deadline:** 16 October at midnight
- **Lecture 2 (feedback sessions):**
 - **Group 1:** 30 October, 13:15-15:00; Sal D
 - **Group 2:** 30 October, 15:15-17:00; Sal D

How are the groups organized?

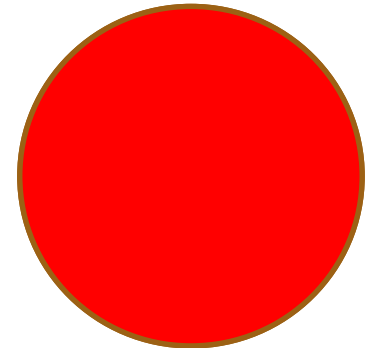
- **Group 1:** Initial letter of family name a-l
- **Group 2:** Initial letter of family name m-ö



What will you write about?

Take 5 minutes discuss your essay ideas with the person sitting next to you.

**5
minutes**



And finally...

MOOC in Academic Writing in English:

<https://www.coursera.org/learn/writing-english-university>



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**Thanks for today
and good luck with writing!**



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Some additional resources [I]

- For information on the common grammar errors see AWELU (Academic Writing in English, Lund University): <http://awelu.srv.lu.se/grammar-and-words/>
 - Subject-verb agreement: <http://awelu.srv.lu.se/grammar-and-words/common-problems-and-how-to-avoid-them/subject-verb-agreement/>
 - Adjectives and adverbs: <http://awelu.srv.lu.se/grammar-and-words/common-problems-and-how-to-avoid-them/adjectives-and-adverbs/>
 - Run-on sentences: <http://awelu.srv.lu.se/grammar-and-words/common-problems-and-how-to-avoid-them/run-on-sentences/>
- For a very helpful resource on reporting verbs and phrases see the guide produced by Adelaide University's Writing Centre:
https://www.adelaide.edu.au/writingcentre/learning_guides/learningGuide_verbsForReporting.pdf
- For linking words and phrases see the handout produced by the Student Support Centre at Victoria University, Wellington: Student Support Services. "Linking Words and Phrases." Victoria University, Wellington. Web. 12 Apr. 2015.
<http://www.victoria.ac.nz/st_services/slss/studyhub/handouts/Linking%20Words&Phrases.pdf>



Some additional resources [II]

- For discussion and examples of informal vocabulary, the following resource, “Language for Academic Writing,” from the University of Jyväskylä:
- "Language for Academic Writing." *Humanistinen Tiedekunta*. Web. 12 Apr. 2015. <[https://www.jyu.fi/hum/laitokset/kielet/oppiaineet_kls/englanti/studies/thesis-and-academic-writing/language-for-academic-writing/Language for Academic Writing](https://www.jyu.fi/hum/laitokset/kielet/oppiaineet_kls/englanti/studies/thesis-and-academic-writing/language-for-academic-writing/Language%20for%20Academic%20Writing)>.
- **Active or passive voice?**
 - Corson, Tim, and Rebecca Smollett. "Passive Voice: When to Use It and When to Avoid It." *Passive Voice: When to Use It and When to Avoid It*. University College Writing Centre. Web. 12 Apr. 2015. <<http://www.writing.utoronto.ca/advice/style-and-editing/passive-voice>>.
 - And finally, Manchester University’s *Academic Phrasebank* is a great place to find examples of phrasings for all different sorts of academic writing situations. It is particularly good if you have writers block: Morley, John. "Academic Phrasebank." *Academic Phrasebank*. Manchester University. Web. 12 Apr. 2015. <<http://www.phrasebank.manchester.ac.uk/>>





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