



# Technical Writing for ESL Engineers

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# Verbs - Review



- **Helping verbs**

- **Two types**

- **Modal – do not change tense (can, could, may, might, must shall, should, will, would, ought to)**
- **do, have, be – sometimes change tense**
  - do, does, did
  - have, has, had
  - be, am, is, are, was, were, being, been

- **Main Verbs**

- **Five Forms (except for to be, which has eight forms)**
  - **Base form (solve, run)**
  - **Past tense (solved, ran)**
  - **Past participle (solved, run)**
  - **Present participle (solving, running)**
  - **-s forms (solves, runs)**



# Base verb forms

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- Modal + verb – use base form of verb without *to* except for *ought to*
  - The computer will control the experiment. (not *will controlling*)
  - The temperature ought to increase with pressure. (not *ought increase*)
- Do/does/did + verb – use base form (used with not or never to negate an expression, in questions, or to emphasize verb)
  - Equilibrium calculations do not require initial species specifications – just elemental composition and overall enthalpy.
  - Do these results justify the conclusions?
  - The model does predict the low-temperature observations.



# Past participle forms

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- After have, has, or had, use the past participle to form one of the perfect tenses, even if combined with a modal helping verb
  - This experiment has proven our hypothesis. (present perfect – started in the past and is still happening)
  - Student often have struggled with this concept. (past perfect – already completed at the time of another past action)
  - Impurities will have compromised the data. (future perfect – will be completed before or by a certain future time)



# Present Participle Forms

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- Use the present participle with forms of the verb *to be*. The form *be* always requires a modal. The form *been* always requires have or has.
  - This research is redefining the role of catalysis in biochemistry.
  - Crystals will be formed as the liquid cools.
  - Corrosion long has been a great challenge in maritime use of steel.



# Past Participle (Passive) Forms

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- Use the past participle with *be, am, is, are, was, were, being, or been* to form passive-voice sentences. In such sentences, the subject receives the action rather than doing it. Only transitive verbs (verbs that require objects) may be used to write in the passive voice.
  - The conclusions are illustrated in Figure 10.
  - The objectives have been met.
  - Data have been presented that challenge the previous conclusions.



# Verbs in Conditional Sentences



- **Factual conditional sentences use present tense.**
  - If the temperature exceeds the boiling point, no liquid should remain in the vessel.
- **Habitually true conditional sentences use consistent tense in both phrases.**
  - When my advisor comes to the lab, something always breaks.
  - As final exams approached, research productivity decreased.
- **The if clause of a predictive sentence takes the present tense, with the independent clause typically using one of the modals *will, can, may, should, or might* and the base form of the verb.**
  - If the model works, it should predict increasing conversion with pressure.



# Gerunds and Infinitives

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- A gerund is formed from a verb by adding an *-ing* ending. An infinitive is formed by preceding the base form of the verb with *to*. Some verbs can combine with either form, while others cannot.
- Verb + gerund or infinitive
  - These verbs can take either form with little difference in meaning: *begin, continue, like, start, can't stand, hate, love*.
    - I love learning.
    - I love to learn.
  - Some verbs can take either form, but the meaning may change dramatically: *forget, remember, stop, try*.
    - The student stopped recording the data.
    - The student stopped to record the data.





# Gerunds and Infinitives (cont'd)



- **Verb + Gerund**

- These verbs may combine with a gerund but not an infinitive: *admit, appreciate, avoid, deny, discuss, enjoy, escape, finish, imagine, miss, postpone, practice, put off, quit, recall, resist, risk, suggest, tolerate.*
  - This procedure avoids risking (not *to risk*) electrical shorts.
  - Students enjoy finishing (not *to finish*) classes.

- **Verb + Infinitive**

- These verbs may combine with an infinitive but not an gerund: *agree, ask, beg, claim, decide, expect, have, hope, manage, mean, offer, plan, pretend, promise, refuse, wait, want, wish.*
  - The sponsor expects to see (not *seeing*) a report next week.



# Gerunds and Infinitives (cont'd)



- Some verbs in the active voice require a noun or pronoun between the verb and an infinitive. These include: *advise, allow, cause, command, convince, encourage, have, instruct, order, persuade, remind, require, tell, urge, warn*. Gerunds are not used in such constructions.
  - My advisor encourages me to write (not *writing*) in the active voice.
  - The manual urges users to calibrate (not *calibrating*) the system weekly.
- These verbs + noun/pronoun, when used with the indicated meanings, do not allow the infinitive marker *to* in the construction: *have (“cause”), let (“allow”), make (“force”)*.
  - Let the data resolve (not *to resolve*) the conflict.
  - Have the vendor refund (not *to refund*) the charges.



# Tense in Science

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- Historical science that is still current is in the present tense.
  - Galileo taught that the earth orbits the sun (not *orbited the sun*).
- Historical science that has been superseded with new or better ideas is in the past tense.
  - Aristotle taught that matter comprised earth, wind, fire, and water. (not *comprises earth, wind, fire, and water* – further note the use of *comprise* here).



# Articles



- **Definite (*the*) and indefinite (*a, an*) articles indicate that a noun is about to appear, although adjectives and other modifiers may come prior to the noun. Other words that also indicate a noun is eminent (determiners) include possessive nouns or pronouns, numbers, and the pronouns *this, that, these, those, all, any, each, either, every, few, many, more, most, much, neither, several, and some*.**
- **Generally either an article or a determiner is used, but not both. Some common exceptions to this rule are the expressions *a few, the most, and all the*.**
  - **His laser provides radiative flux. The laser provides radiative flux. A laser provides radiative flux. (first two sentences refer to a specific laser while the last sentence refers to a generic laser).**
  - **A few drops spilled on the floor.**



# Indefinite articles

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- Use *a* or *an* with singular, countable nouns whose specific identity is not known to the reader. In this usage, *a* or *an* means “one among many” or “any one”.
  - New equipment arrived in a crate. (where no specific crate is intended)
  - We need an adiabatic reactor. (where no specific reactor is intended)
- The article *a* precedes a consonant sound while *an* precedes a vowel sound. Words beginning with *h* can have either sound (*heart* and *handicap* are consonant while *hour* and *honor* are vowel sounds – *herb* is pronounced both ways).



# Indefinite articles

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- Do not use indefinite articles with non-countable nouns. Amounts of non-countable nouns use the words *some, any, or more*.
  - Gold reflects infrared light effectively. (not *A gold reflects ...*)
  - Metal may spontaneously ignite (not *A metal ...*).
  - Air fills the container (not *A air ...*)..
  - More air fills the container.



# Definite articles

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- Use *the* (definite article) with most nouns whose specific identity is known to the reader, either because it was previously introduced, a phrase specifically identifies it, a superlative makes its identity specific, or the context makes it clear.
  - A polymer flowed into the mold. The polymer formed a resin upon exposure to UV light.
  - The culture placed in the bioreactor consumed all of the available oxygen.
  - The detector with the highest signal-to-noise ratio produced the most reliable signal.
  - A detector with a high signal-to-noise ratio produced the most reliable signal.



# Definite Articles

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- Do not use *the* with proper names or with plural non-countable nouns meaning *all* or *in general*. Usually avoid *the* with singular proper nouns. Exceptions: geographic regions, names of oceans and some seas, etc.
  - Brigham Young University maintains high educational standards. (Not *The Brigham Young University* ... though many people use this phrase – however *The university* ... would be correct since it is not a proper name).
  - Mirrors reflect solar light to the collection panel. (Not *The mirrors* ... unless some specific discussion of the mirrors at a given site, for example, is intended. )
  - Catalysts accelerate chemical reactions without being consumed. (Not *The catalysts* ... ).
  - The Finger Lakes surprise many visitors by their beauty.





# Sentences Require Subjects

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- **Some languages allow omission of subjects. This is only allowed in the imperative voice in English (Report to the dean's office.).**
  - **The data exhibit no obvious flaws: they require no further improvement.**
- **If the subject occurs after the verb, English may require an expletive (it or there) at the beginning of the phrase to call attention to the subject later in the sentence. The verb agrees with the subject, not with the expletive. *There* indicates the existence of location of something while *it* is a more generic placeholder.**
  - **There exist many sources of systematic error.**
  - **It seems obvious that this approach has limitations.**



# One subject, object, or adverb suffices

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- **Subjects should occur only once in a given clause in proper English**
  - The experiment that had so often failed finally succeeded. (not ... *failed it finally succeeded.*)
  - The pump ruptured a seal. (not *The pump it ruptured ...*)
- **Objects and adverbs should not be repeated in adjective clauses, which begin with relative pronouns (*who, whom, whose, which, and that*) or relative adverbs (*when, or where*). Avoiding dangling prepositions commonly also avoids this problem.**
  - The projectile missed the target it was aimed at. (Not ... *aimed at it.*)
  - The projectile missed the target at which it was aimed.



# Adjective Order

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- **Cumulative adjectives** (those between which the word *and* cannot be inserted) do not have commas between them and generally occur in the order (with many exceptions): article, evaluative, size, length or shape, age, color, nationality, religion, material, noun-adjective, noun. Avoid using too many (>3) sequential adjectives. English is particular about the order.
  - *The new steel* container burst. (not *The steel new container ...*).
  - Fluid splashed across *the tidiest old work* bench (not ... *old tidiest work, tidiest work old, etc.*).
- **Coordinated adjectives** (those between which the word *and* can be inserted and are not interdependent) have less preferred order
  - *High-pressure, black, 8 foot* hoses fill the closet.



# Adverb Placement



- **Adverbs can occur in many places, but generally not between a verb and its object or between the parts of an infinitive verb. All of the following are acceptable:**
  - ☺ Trends in the results slowly appeared.
  - ☺ Slowly, trends in the results appeared.
  - ☺ Trends in the results appeared slowly.
  - ☺ The new system pumped the reservoir completely dry.
  - ☺ Coaxing the sensors to respond properly proved difficult.
- **The first line below is incorrect by all accounts and many people, especially the over educated, would object to the second.**
  - ☹ The new system pumped completely the reservoir dry.
  - ☹ Coaxing the sensors to properly respond proved difficult.



# Participles as Adjectives



- Both present and past participles may be used as adjectives. Present participles always end in *-ing* and should describe a person or thing causing an experience. Past participles generally end in *-ed* and should describe a person or thing. Either type can either precede the noun it modifies or follow a linking verb, in which case they modify the subject.
  - Preceding nouns
    - ☺ Debugging a computer code can be a *frustrating* experience.
    - ☺ *Frustrated* students rose up in rebellion.
  - Modifying subjects
    - ☺ The report was *exhilarating*.
    - ☺ The ideas stood *unopposed*.
    - ☺ The professor was *inspiring*.
    - ☺ The class was *inspired*.
    - ☺ The pump was *working* (not *worked*).
    - ☺ The fluid was *pressurized* (*pressurizing*).



# Prepositions

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- **Use prepositions consistently when referring to time and place.**
  - **Time**
    - *At* indicates a specific time: We will discuss this at dinner, at 7 am, etc.
    - *On* indicates a specific date: on Tuesday, on May 21<sup>st</sup>.
    - *In* a part of a day, year, or other time period: in the afternoon (but at night), in July, in three hours
  - **Place**
    - *At* indicates a specific location or target: at home, at school, at the bullseye, at the intersection.
    - *On* indicates a surface or street: on the wall, on Joyce Street.
    - *In* indicates an enclosed space or location: in the box, in the circle, in Wyoming.

