

A Teacher's Guide to Adopting the Planned Humor Incorporation System for Teaching and Learning Enhancement (PHISTLE)

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Chapter 1: Introduction

Humor as Pedagogical Approach

Teaching is a collaborative process that relies not only on a teacher's expertise but also on a student's willingness to learn. When students lack motivation, even the most skilled educators may struggle to facilitate effective learning. One powerful strategy to enhance students' motivation and engagement is the integration of humor into teaching.

Definition of Humor

Humor is defined as **“anything that the teacher and/or students find funny or amusing”** (Wanzer et al., 2006, p. 82). It encompasses the intentional use of both verbal and non-verbal communication that conveys incongruous meanings and generates laughter (Booth-Butterfield & Booth-Butterfield, 1991; Martin, 2007).

The **incongruity theory** helps explain why certain things are perceived as humorous. It posits that a contradiction is essential for humor (Berlyne, 1960; Martin, 2007), suggesting that something is considered humorous when it is viewed as absurd, and the audience can identify and resolve the incongruity.

Benefits of Humor in Education

Studies have shown that humor can benefit teaching and learning by:

1. Increasing motivation
2. Enhancing engagement
3. Stimulating creativity
4. Improving attention
5. Relieving stress

(Wandersee, 1982; Powell & Andresen, 1985; White & Lewis, 1990; Buskist et al., 2002; Garner, 2006; Banas et al., 2011; Segrist & Hupp, 2015; Appleby, 2018)

Humor is often a hallmark of successful teachers.

Challenges in Using Humor

Despite the advantages of incorporating humor into teaching, not all educators possess a natural sense of humor. Even those who are generally humorous may find it challenging to deliver appropriate jokes consistently in the classroom. Moreover, while spontaneous humor can be effective, it is often unpredictable and difficult to replicate. Therefore, teachers should adopt a strategic approach to using humor in order to achieve desirable learning outcomes (Bolkan et al., 2018).

PHISTLE as a Strategic Pedagogical Framework



To address these challenges, we developed the **Planned Humor Incorporation System for Teaching and Learning Enhancement (PHISTLE)** – a standardized humor pedagogical framework that strategically integrates specific types of humor into lectures to ensure a consistent and beneficial impact on student learning outcomes.

Advantages of PHISTLE include:

1. **Replicability:** The same humor can be utilized by different educators, yielding similar effects. This eliminates the need for teachers to create their own original humor, as the same material can be shared and effectively delivered by various instructors.
2. **Generalizability:** The methods for incorporating humor are applicable across diverse disciplines, making PHISTLE a versatile tool for educators.
3. **Sustainability:** PHISTLE's foundational products include lecture/lesson notes in the form of PowerPoint presentations, allowing for reuse year after year to generate similar beneficial effects for different student cohorts.

Chapter 2: Standardization of Humor in PHISTLE

To achieve consistent outcomes, PHISTLE standardizes the following parameters:

- (1) Types of Humor
- (2) Modes of Incorporation
- (3) Frequency of Incorporation

(1) Types of Humor in PHISTLE

Historically, there has been no consensus on the categorization of humor types. However, the most common existing classifications are based on the humor's characteristics, delivery methods, content relevance, or style.

Several types of humor are considered suitable for the classroom, including **analogy**, **wordplay**, **absurdity/exaggeration**, **anecdotes**, **self-deprecating**, and **physical/slapstick** humor. In contrast, other types, such as **satire/sarcasm** and **dark humor**, are generally regarded as risky for educational settings due to their potential to offend certain students (**Fig. 1**).

Types of humor Suitable for teaching: • <u>Analogy</u> • <u>Wordplay</u> • <u>Absurdity/exaggeration</u> • Anecdotes • Self-deprecating • Physical/slapstick Risky for teaching: • Satire/sarcasm • Dark humor	Types of humor (content) Effective: • <u>Content-related humor</u> Ineffective: • Unrelated humor	Styles of humor Suitable for teaching: • Affiliative • Self-enhancing • Self-defeating Risky for teaching: • Aggressive
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Figure 1. Types and styles of humor that are suitable and unsuitable for teaching. The types of humor that are utilized in PHISTLE are underlined in this figure.

PHISTLE mainly focuses on using three types of humor: **(1) Analogy, (2) Wordplay** and **(3) Absurdity/Exaggeration**:

1. **Analogies** (a comparison between one thing and another used for explanation, or a thing which is comparable to another thing in certain respects) (Booth-Butterfield & Wanzer, 2016; Frymier et al., 2008; Wanzer et al., 2006).
2. **Wordplay** (i.e. playing with words, such as using puns [double meaning words] or acronyms) (Bryant et al., 1980).
3. **Absurdity/Exaggeration** (Booth-Butterfield & Wanzer, 2016; Frymier et al., 2008; Wanzer et al., 2006). This can include the use of memes.

A humor can belong to more than one type of humor. For instance, a humor can be both an **analogy** and a **wordplay** simultaneously. Please visit **Chapter 3** of this guide to see such examples.

Benefits of these three types of humor:

- a) They are relatively short;
- b) They can be easily incorporated into PowerPoint presentations;
- c) They are transferrable from one teacher to another; and
- d) They have been found to be effective in teaching and generating positive student outcomes.

In our study (Ngai et al., 2025), we have found that these three types of humor are effective in generating positive outcomes in students in the following ways:

1. Improving their **learning competence** (i.e. aiding recall and understanding of the content taught);
2. Increasing their **personal attributes** (i.e. enhancing their motivation to learn and confidence);
3. Fostering positive **future behaviors** (i.e. effective learning behaviors and helping others); and
4. Reducing **stress**.

Other Types/Styles of Humor

Anecdotes, self-deprecating and **physical/slapstick** humor are also effective in the classroom (Booth-Butterfield & Wanzer, 2016; Frymier et al., 2008; Bieg & Dresel, 2018). However, these types of humor are not utilized in PHISTLE for several reasons.

Anecdotes (i.e. stories) are often personalized. A story that resonates with one teacher may not be applicable to another. Additionally, the lengths of **anecdotes** can vary significantly; some personal stories may take just one to two minutes to tell, while others may extend to five or six minutes. These variations complicate the use of **anecdotes** as a consistent and replicable type of humor in lecture PowerPoints.

Similarly, **self-deprecating** (i.e. making fun of oneself) can also be quite personalized. For instance, a teacher might joke about being skinny, bald, or disabled, but these references may not resonate with other teachers who do not share those characteristics.

As for **physical** or **slapstick** humor (characterized by exaggerated, clumsy behavior), they often involve physical movement and can be very effective in inducing laughter in the classroom. However, they do not align with the PHISTLE approach, which requires humor to be incorporated into lecture PowerPoint slides. Additionally, **physical** and **slapstick** humor can be challenging for different teachers to replicate consistently.

Conversely, **aggressive humor**, **unrelated humor** (as opposed to content-related humor), **other-disparaging humor**, and **sarcasm** are generally found to be ineffective in teaching (Banas et al., 2011; Bieg & Dresel, 2018; Frymier et al., 2018). For instance, if a teacher is discussing “obesity” in a healthcare or science-related context and makes fun of a particular student for being obese, this may momentarily induce laughter among the class but could seriously offend the targeted student. Such an action might also lead other students to view the teacher negatively, ultimately damaging the teacher-student rapport. This scenario exemplifies **aggressive humor**, which poses a risk to the classroom environment.

In contrast, if a teacher makes a **self-deprecating** joke about their own weight, it is less likely to offend anyone else. This form of **self-deprecating** humor (also known as **self-defeating** humor) is generally safe for teaching, despite not being one of the selected humor types in PHISTLE.

Content-related Humor

In teaching, it is essential to use instructional **content-related humor** – humor that is relevant to the course materials being taught – which has been shown to enhance the learning experience and generate positive outcomes among students (Wanzer et al., 2010).

In PHISTLE, the **types of humor** employed are crucial for creating **content-related humor**. For instance, in disciplines such as Information Technology (IT) or Computer Science, a teacher might discuss concepts like "kilobyte," "megabyte," "gigabyte," and "terabyte," before humorously introducing the term "trilobyte" (**Fig. 2**). In reality, a "trilobite" refers to an extinct marine arthropod, which is unrelated to IT. However, this joke utilizes **wordplay** to connect humor with the teaching material, making it an example of **content-related humor**.

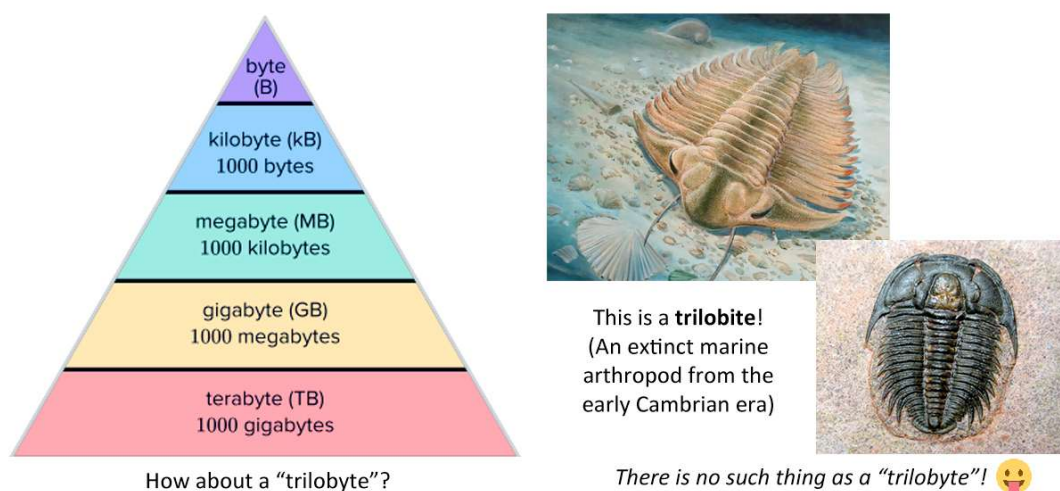


Figure 2. Example of a content-related humor in the form of a wordplay, by blending in the word "trilobite" with computer science terminologies, such as kilobyte, megabyte and gigabyte etc.

When humor is **content-related**, it enables learners to associate the humor with the **educational topic** they are studying, thereby enhancing their motivation and interest in that specific subject. Once this association is established, recalling the **humor** will also trigger memories of the **learned topic**, and vice versa. This reciprocal relationship increases the likelihood of retention and leads to more stable memorization of the material. Therefore, the more types of humor – such as **analogy**, **wordplay**, or **absurdity/exaggeration** – that are associated with a particular piece of **humor**, the stronger the connection to the **educational content** will be, resulting in a more robust content relation.

Humor Contents with High Risks

Humor that involves sensitive topics, such as **gender**, **race/ethnicity**, **sexual orientation**, **political beliefs**, and **religion**, often has the potential to alienate individuals and diminish inclusiveness. Therefore, these types of content pose significant risks when used in classroom humor. For instance, a joke about Isaac Newton splitting sunlight into a rainbow may inadvertently offend students who identify as part of the LGBTQ+ community (**Fig. 3**).



Figure 3. Example of a humor with content that may risk offending individuals with a homosexual preference.

If you are teaching subjects that encourage open-minded exploration of sensitive topics, your students may be receptive to humor that engages with these themes. In such cases, you might consider incorporating humor related to these subjects. However, if you are not directly addressing these topics in your curriculum, it is generally safer to avoid jokes involving sensitive content altogether.

Unlike stand-up comedians, who are free to explore a wide range of topics for the sake of entertainment, educators have the responsibility to foster a respectful and inclusive learning environment. We must adhere to professional standards and conduct, which often requires us to be politically correct and as inclusive as possible.

(2) Modes of Incorporation

There are at least two modes of humor incorporation in PHISTLE:

- (a) Pre-topic humor incorporation
- (b) Post-topic humor incorporation

(a) Pre-topic humor

Pre-topic humor refers to the presentation of humor to the audience before introducing the serious educational topic or content. This mode of incorporation has the potential advantage of “taking the audience by surprise,” which may enhance its effectiveness in generating amusement. Additionally, **pre-topic humor** can create an “awakening effect” prior to the serious content, allowing students to become fully focused on what the teacher is about to teach, thereby facilitating more effective learning.

However, **pre-topic** incorporation must be approached with caution. It is essential to clearly distinguish the humor from the actual educational content; otherwise, students may become confused and misinterpret the educational material as part of the joke.

To address this in PHISTLE, we have standardized this mode of incorporation to include a “**Point of Return to Reality**” (PRR) that signals the transition out of humor and helps students differentiate between the **humor** and the **educational content**.

A common **PRR** we use in PHISTLE is the cue “**Just kidding! ☺**”, which appears as a pop-up text on the PowerPoint slide at the end of a **pre-topic humor** segment. This immediately informs students that what they just heard was merely a joke, and the following material will be the serious **educational content**. Other examples of **PRRs** include phrases such as “**Ok, that was just for fun...**”, “**Enough ridicules... time to get back to our topic...**”, and “**Ok, time to get back to reality now...**” etc.

(b) Post-topic humor

Post-topic humor refers to the presentation of humor to the audience after the serious educational topic or content has been covered. This mode of incorporation works by “chasing” an educational topic with a joke, similar to the idea of following bitter medicine with something sweet. Compared to **pre-topic humor**, **post-topic humor** is relatively simpler to execute since it does not require a **PRR**.

In the case that the **educational content** and the corresponding **content-related humor** are presented together on the same PowerPoint slide, the determination of whether it is classified as **pre-topic** or **post-topic humor** will depend on which element is presented first.

(3) Frequency of Incorporation

Ziv (1988) found that incorporating **three to four content-related humor** elements per lecture is optimal. Using too little humor can diminish its impact, while excessive humor may distract students from the lesson.

In PHISTLE, we integrate **at least one but no more than three** instances of humor into **every 50-minute lecture**. Furthermore, we avoid incorporating humor on the **first or last slide** of a PowerPoint presentation. Students tend to be highly focused at the beginning of a lecture, so humor is unnecessary for maintaining their attention. Conversely, drawing attention to humor on the last slide is likely to have a minimal effect on their learning.

Chapter 3: Examples of Humor

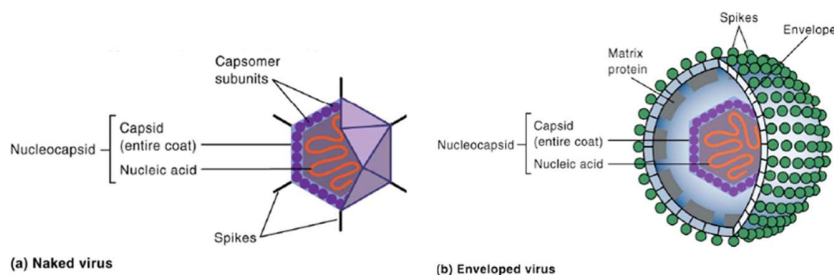
Here, we will showcase some examples of humor that conform to the PHISTLE framework.

Example 1: An example of a **wordplay** + **absurdity** type of humor in the life sciences discipline using the **post-topic** incorporation mode. Viral structure was first explained followed by an irony about the “naked virus” still feeling “naked” even though it had an “entire coat”.

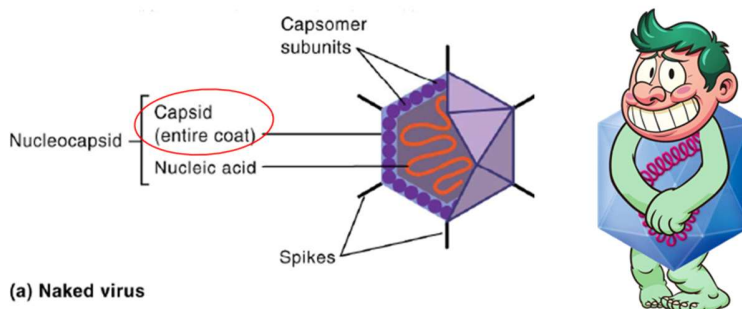
Viral structure

5. Viral envelopes

- Not all viruses have envelopes
- Derived from **host** nuclear or plasma membrane **lipid bilayers**
- Carbohydrate & lipid from the **host** origin
- Proteins from **host** or **virus** origin
- Envelopes may or may not be covered by **spikes** (carbohydrate-protein complex that project from the envelope surface)



Ironically...



... Although the **naked virus** is wearing an “entire coat” (capsid), it still feels *naked*...

Example 2: An example of a **wordplay + analogy** type of humor in the life sciences discipline using the **pre-topic** incorporation mode. Counterstain using safranin was first jokingly explained as “counterstain using saffron” – a spice commonly used for gourmet cooking in Michelin 3-star restaurants. The joke was followed by an animation of the “just kidding” smiley logo which acted as the **PRR**. This was then followed by the true explanation of counterstain using safranin. Saffron and safranin share similar spelling and pronunciation, and are both red in color.

Counterstain with **Saffron**

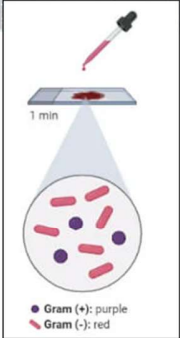
Saffron: One of the world's most expensive spice, for seasoning and colouring of food!



Your slide of bacteria will give off a distinct floral aroma!



JUST KIDDING!

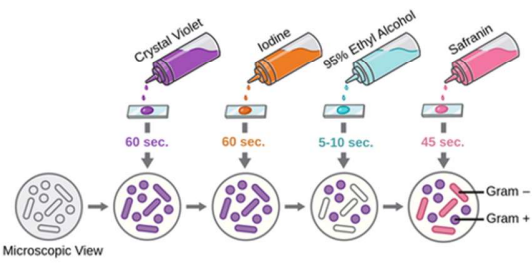
Counterstain with Safranin

- A **counterstain** is a stain with colour contrasting to the **principal stain (crystal violet)**.
- **Safranin:**
 - Stains **Gram –ve** bacteria.
 - Without **safranin**, we will not be able to see the **Gram –ve** bacteria on the slide.

Cc1cc(N)c2c(c1)[n+]([c-])c3cc(N)cc(C)c32.[Cl-]

Safranin





Perspective taking will produce the **altruistic motive** to reduce the other person's distress.



PERSPECTIVE

MAKES ALL THE DIFFERENCE.

Example 4: An example of a **wordplay + analogy** type of humor in the life sciences discipline using the **post-topic** incorporation mode. Here, the extremely information-heavy biochemistry topic of the **10 steps of glycolysis** was first taught to the students. Then this slide was shown that utilizes the first letter of each step to create an acronym of “**Papa, I Pooped! Call In Online Para-Medic Deployment Please!**” In glycolysis, **Step #3** is the committing step. In this acronym, “**Pooped**” is the committing step, because “**once you pooped, you can’t go back!**” Thus, once passed this point, the glucose molecule is committed to go through all 10 steps of glycolysis. This funny acronym provides students some extra motivation to memorize the 10 complex steps of glycolysis.

10 Steps of Glycolysis:

1. Phosphorylation of glucose by **hexokinase**  -1 ATP
2. Isomerization of G6P by **phosphohexose isomerase**
3. Phosphorylation of F6P by **phosphofructokinase (PFK)**  -1 ATP Committing step! ←
4. Cleavage of F1,6-BP by **aldolase**
5. Isomerization of DHAP by **triose phosphate isomerase**
6. Oxidation of GAP by GAPDH (+2 NADH)
7. Phosphorylation of ADP to ATP by **PGK**  +1 ATP  +1 ATP
8. Migration of phosphate by **phosphoglycerate mutase**
9. Dehydration of 2-PG to PEP by **enolase**
10. Phosphorylation of ADP to ATP by **pyruvate kinase**  +1 ATP  +1 ATP

“**Papa, I Pooped! Call In Online Para-Medic Deployment Please!**”

↑
Committing
step!

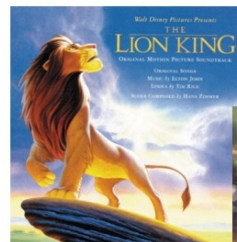


Example 5: An example of an **analogy** type of humor in biochemistry using the **post-topic** incorporation mode. Each time a line of text appears on the left to explain the use of amino acids as fuel in organisms, it is then followed by a picture related to a character in a Disney movie. The character has some sort of features that resembles the text on the left. For instance, “Stitch” is a blue alien that is well-known for eating everything. Thus, it was matched with “omnivores”, while Tinkerbell is small and has glittery “fairy dust” around her, so she was matched with “microorganisms” which scavenge amino acids from their environment.

Fun facts about the use of amino acids as fuel in organisms (illustrated using Disney movies)



- About 90% of energy needs of **carnivores** can be met by amino acids immediately after a meal.
- Only a small fraction of energy needs of **herbivores** are met by amino acids.
- **Omnivores** stand somewhere in the middle, and depends on availability of sugar and oxygen.
- **Microorganisms** scavenge amino acids from their environment for fuel when needed.
- **Plants** do not use amino acids as a fuel source, but can degrade amino acids to form other metabolites.



Amino acids?!



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