**Topic 4**

**Begin Your Search: Literature review**

In this topic we will learn about:

* What is literature review
* The importance of doing a literature review
* The sources for your literature search
* What needs to be covered in the literature search
* Doing and documenting the literature review

**What is literature review?**

By now, you must have done some literature review yourself, whether you realize it or not. But, what is it?

By definition, literature is a noun which means 1written works, especially those considered of superior or lasting artistic merit; 2books and writings published on a particular subject; 3leaflets and other printed matter used to advertise products or give advice. In this internet age, we may add online materials of all the mentioned above as the literature as well.

Meanwhile, review means 1an act of carefully looking at or examining the quality or condition of something or someone; examination or inspection or 2a critical evaluation.

What is literature review?

Combining both definition, literature review means carefully examining and giving a critical evaluation of written materials that are superior and with merits. Carefully examining means that you need to grasp the content of the material and not to merely copy and paste it in your report. You need to be critical to the content presented and able to use it for future justification of your research project.

**Why do we do literature review?**

Literature review is a process. It is an ongoing process in a research project. Many might have done literature review but did not realize what they are doing is actually a literature review. And many more do not know realize the importance of doing a literature review.

1,2,3 Definition based on Merriam Webster Online Dictionary

Doing an LR serves several purposes:

* To learn new knowledge, to expand knowledge
* To establish a strong understanding of the subject matter
* To study all matters in the research context
* To avoid doing what others have done before
* To comprehend what others have done things, how they do it, what is(are) the drawbacks/ disadvantages of it
* To examine best and worst practices

When you embark on a research project, you may be in the dark about the research area or project. You may not know anything about the subject. This will happen especially when the project is assigned to you by your supervisor and not your own. This is when you need to perform the literature review. You need to read and analyze in order for you to gain the new knowledge or expand the existing knowledge that you currently have.

At times, you may already have the knowledge of the subject, however, it is insufficient, and therefore you need to begin reading, doing the literature search to have a strong understanding of the subject matter.

Doing a research project can be a marriage of various different fields of knowledge (Figure 4.1). If this happen, it is important for a researcher to study all the different areas. The more you read the more you will realize how little knowledge that you have. As you read you will discover the various areas that will be relevant to your research project.

Figure 4.1. Research project may involves various fields or area of knowledge

Doing a research project is about doing something that others have not done before. To know whether what you are about to embark on is something that have been done before or not, you must read. This is when you need to go through all the related literature. Find the similarities and differences between your research topic and what others have done. Do not re-invent. If others have done it before, you may try to look at your research from a different angle, you may try solving the problem with a different approach. An improved approach.

In doing a research, you need to look up for how others have solved a problem. It is done through literature review. By doing this, you will be able to see the advantages, disadvantages and weaknesses of the previous solution. This will give you ideas for improvement. Ideas that will produce a better solution. Ideas that are innovative. For this, you must carefully examine the related previous works of other researchers.

Doing literature review will also provide you with the dos and don’ts when doing a research. You may need to study the previous best practices and avoid all the worst practices. This can only be achieved through careful and critical reading of the literature.

**Literature sources**

Where do we find sources for the literature? The sources may varies. With the current online-based community, the information is just a-click away. Figure 4.2 listed the various LR sources that are permissible.

Figure 4.2. LR sources

You may get all of the above sources from the internet, but you need to remember to take down the original source of the literature, that is, the name of the author/writer, the name of the journal/proceedings/books, and year published.

Thesis can also be your source of literature. A carefully written thesis can be a great source of information to your project. Thesis is considered as an unpublished work that can be accepted as a literature.

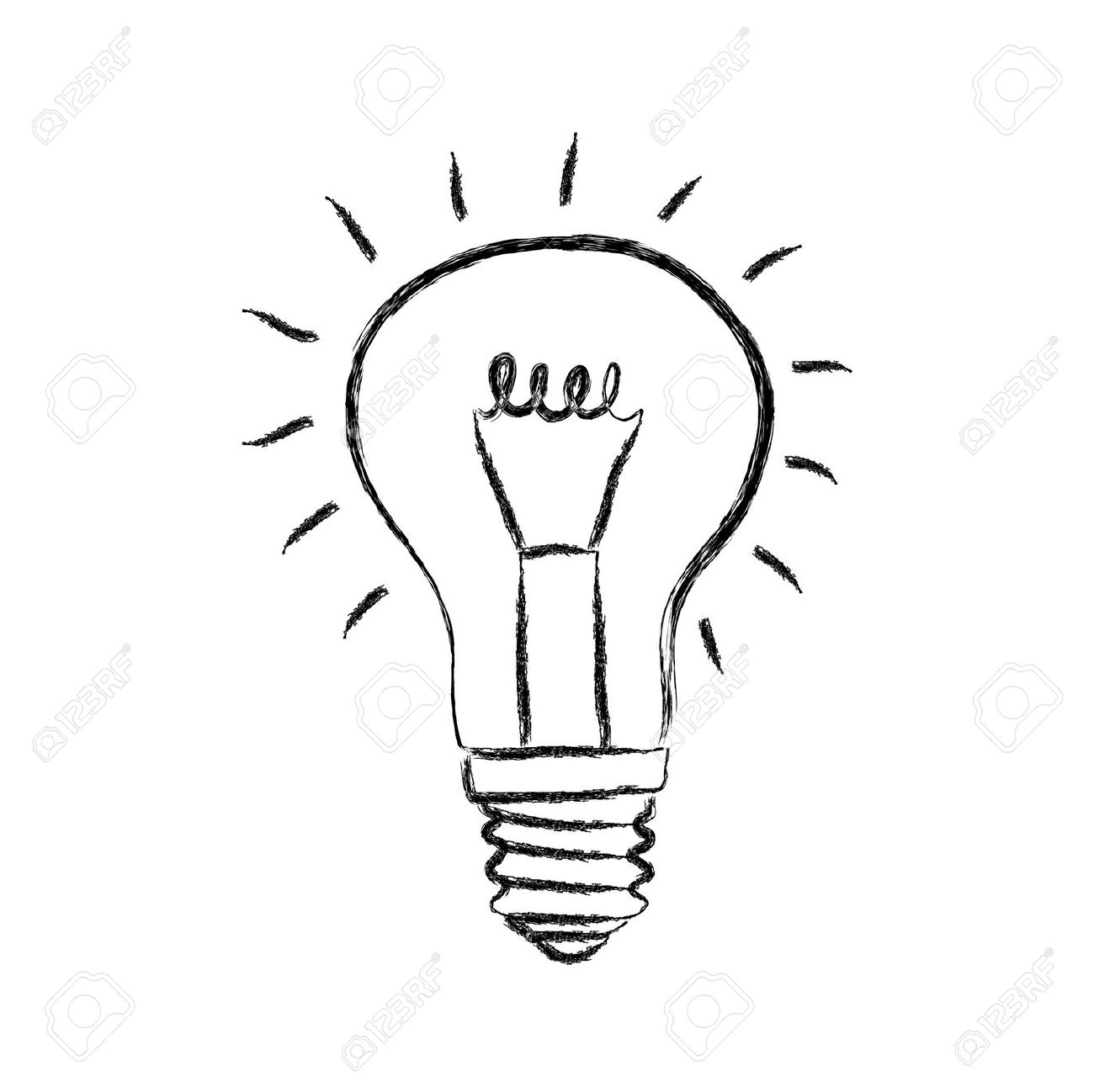
A press statement published in the newspaper and magazines can also be helpful. You must be wise to analyze the significant of the content to be accepted as a literature.

Blog? Can blog become your source of information? Go back to the definition of a literature. It has to have merit and legit. Therefore, blog must be written by a renowned scholars in its area for it to be accepted as a literature.

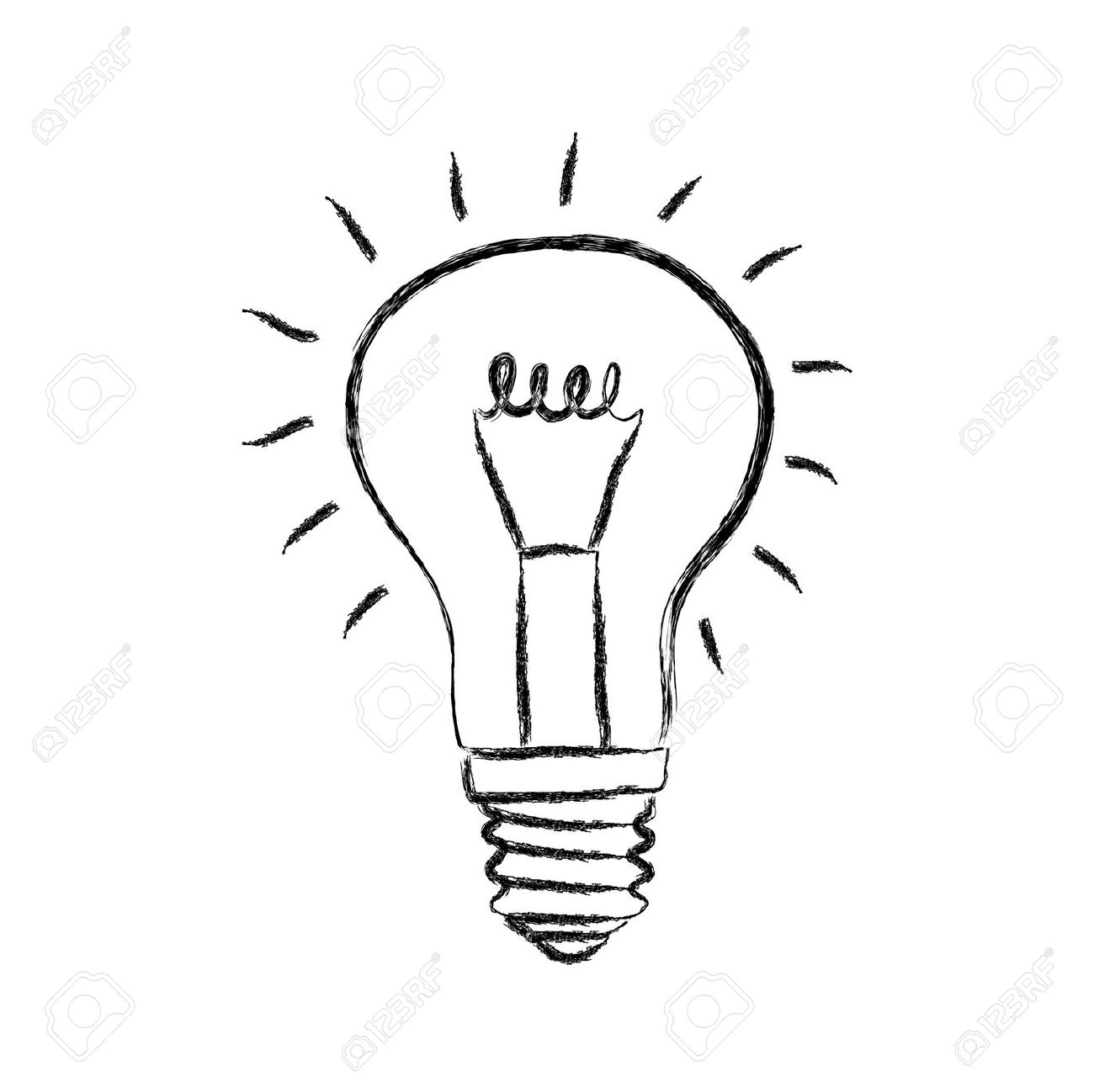
Some of the internet sources that can be useful:

* [**http://scholar.google.com**](http://scholar.google.com) – google scholar is the search engine that help you to search for scholarly articles from the internet
* [**http://ieeexplore.ieee.org/**](http://ieeexplore.ieee.org/) - is the online digital library that has a collection of articles published based on conferences organized by the IEEE.
* **http://dl.acm.org/** - is the ACM (Association of Computing Machinery) digital library. It stores articles published in the various ACM journals and conferences
* **http://www.sciencedirect.com/** - enable you to search for a collection of articles that are peer-reviewed from journals, articles etc.
* [**www.springer.com/computer**](http://www.springer.com/computer) - Lecture Notes in Computer Science is a collection of reviewed articles and books published by Springer

Some articles require you to purchase it in order for you to download and read it. Depending on the institution you are in, you can obtain these articles through the institution’s subscription. Consult your librarian on this matter.



\*Tips: Make sure that your articles are up-to-date. Read articles published at least within five years back for an up-to-date information and knowledge



\*Tips: Look for credible materials only. Consult your supervisor regarding this.

**Context matters**

What are the knowledge areas or information that must be included in the literature review?

Now that you know the reason for doing the literature review, you will have an idea of what you should be reviewing.

Among the topics that must be included are:

* Information about your research area
* Knowledge about your domain
* The know-how of the techniques and approach
* Previous similar works in the area of research
* The pertinent terms and keywords
* Development platform (if any)

Research Area

When doing a research project you must be a master in that particular area. You must be well-versed about the area. For example, if you are doing on image processing, you must know all the aspects in the image processing. If you are doing data mining, it’s important for you to understand and comprehend everything about data mining – the supervised and unsupervised data etc.

Research domain

Domain is where the research project is going to be applied. For example, if your research is about using computing for teaching – your domain is education. If you are trying reconstruct a 2D image of x-ray into a 3D image – your domain most probably will be the medical. If you are recognising a fish based on its tail – your domain most likely will be fishery. If you are introducing a new VR game – your domain will most likely be the entertainment. See table 4.1 for thedifference between research area and research domain.

Table 4.1. The difference between research area and domain

|  |  |  |
| --- | --- | --- |
| Project | Research Area | Domain |
| To reconstruct a 2D image of x-ray into a 3D image | Graphics | Medical |
| To recognize a fish based on its tail | Image processing | Fishery |
| Using AR to design a dreamhome | Graphics/ AR | Home improvement |

Techniques and approach

In solving the problems that you have addressed earlier, you may need to adhere to certain approach/ technique/ theory. All the consideration about the theory must be discussed in the literature review. By discussing the theories, techniques and approaches it shows that you have done a thorough literature search before deciding on how best way to solve the problem.

Other similar works

Prior to doing your project, you need to read, see, observe and understand how others solve a similar problem or use the same technique to solve other problems. You need this information to help develop a good solution. This information will also avoid you from re-inventing the same result, or doing the same mistake. Learn from others. Therefore all the related works that are related to your project must be included in your literature review.

Others

If there are some terms that you think needs clarification or need to be introduced, include them in the LR. Sometime, you may be developing a solution on a newly introduced platform. You may need to discuss about the platform to proof your understanding about the platform. This information must be discussed in the LR too.

**Documenting your literature review**

Documenting your Literature Review is to write all the LR that you have done. However, when writing the literature reviews, you cannot copy each word that you have read into your report.

Writing a literature review requires you to write the reviews based on its content but in your own words and sentences. You are not allow to simply ‘copy–and-paste’ the statements. If you perform the copy-and-paste action, you can be summoned as plagirizing other people’s work. Plagirism is a serious offence in academic world.

There are three strategies to write literature reviews:

* Quoting
* Paraphrasing
* Summarizing

Quoting

Quoting is when the exact word-by-word sentence of an author is used in a writing by another person. It must be exactly the same to the source document. Quoting is allowed however the it must be attributed to the original author. The sentence that is used must be placed in between two quotation signs to show that it is a word of others.

Example:

Original article: By Jiang et al., 2012, Improving Fairness, Efficiency, and Stability in HTTP-based Adaptive Video Streaming with FESTIVE, CoNEXT’12, December 10-13, 2012, Nice, France. 97-108.

A natural strategy is to choose the highest available bitrate lower than the estimated bandwidth. We refer to this as stateless approaches as it only considers the estimated bandwidth without considering the current bitrate or whether it is ramping up or ramping down its bitrate. For example, if the available bitrates are 400, 600, and 800 Kbps and the estimated bandwidth is 750 Kbps, the player chooses 600 Kbps

Accepted quotes:

Sample #1

*Jiang et al. (2012) in his research found that “if the available bitrates are 400, 600, and 800 Kbps and the estimated bandwidth is 750 Kbps, the player chooses 600 Kbps” (101).*

~ this is the full sentence quote. Notice the word-by-word text is repeated in the sentence, taking only part of the original sentence.

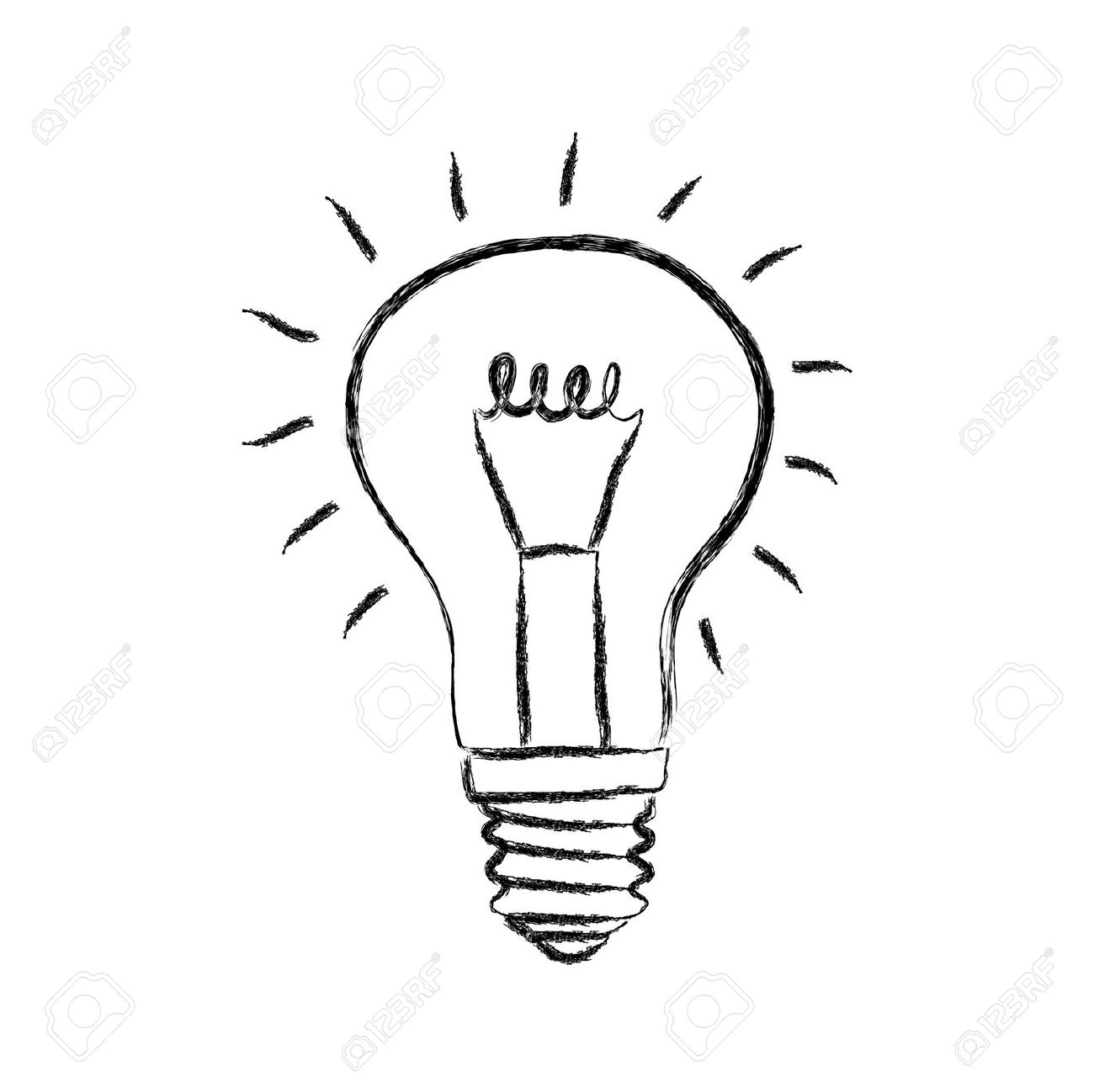
Sample #2

Jiang et al. (2012) stated that:

“*A natural strategy is to choose the highest available bitrate lower than the estimated bandwidth. We refer to this as stateless approaches as it only considers the estimated bandwidth without considering the current bitrate or whether it is ramping up or ramping down its bitrate.” (101).*

~ this is the block quote. The whole sentence which is 4 rows long is used in the text as a word-by-word quotation.

To differentiate between your word and the quotes, use the open-close quotation sign in between the quotes. And this must be followed by the page number at the end to indicates your source.

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\*Tips: You need to be aware that some plagiarize checker did not take the quotation sign into consideration and considered the quoted text as a plagiarized text.

Paraphrasing

Paraphrasing is when you put the idea of the original material in your own words.

Paraphrasing may combine an idea from more than one article in a sentence.

Paraphrasing may also inculde analysis for the idea in the original material.

Therefore, paraphrasing may be longer or shorter than the original material. The paraphrased statement/ sentence must be attritbuted to the original source.

Example

Article #1. Gimeno-Sanz, A. Digital storytelling as an innovative element in English for Specific Purposes, Procedia - Social and Behavioral Sciences, 2015. 178, 110 – 116.

Digital Storytelling has been included as an innovative and motivational element during 3 consecutive years since 2011 in “Technical English”, an optional subject in the Aerospace Engineering undergraduate degree delivered at the Universitat Politècnica de València, Spain. It is equivalent to a B2 level of the Common European Framework of Reference for Languages. Students who pass the subject are awarded 6 ECTS .

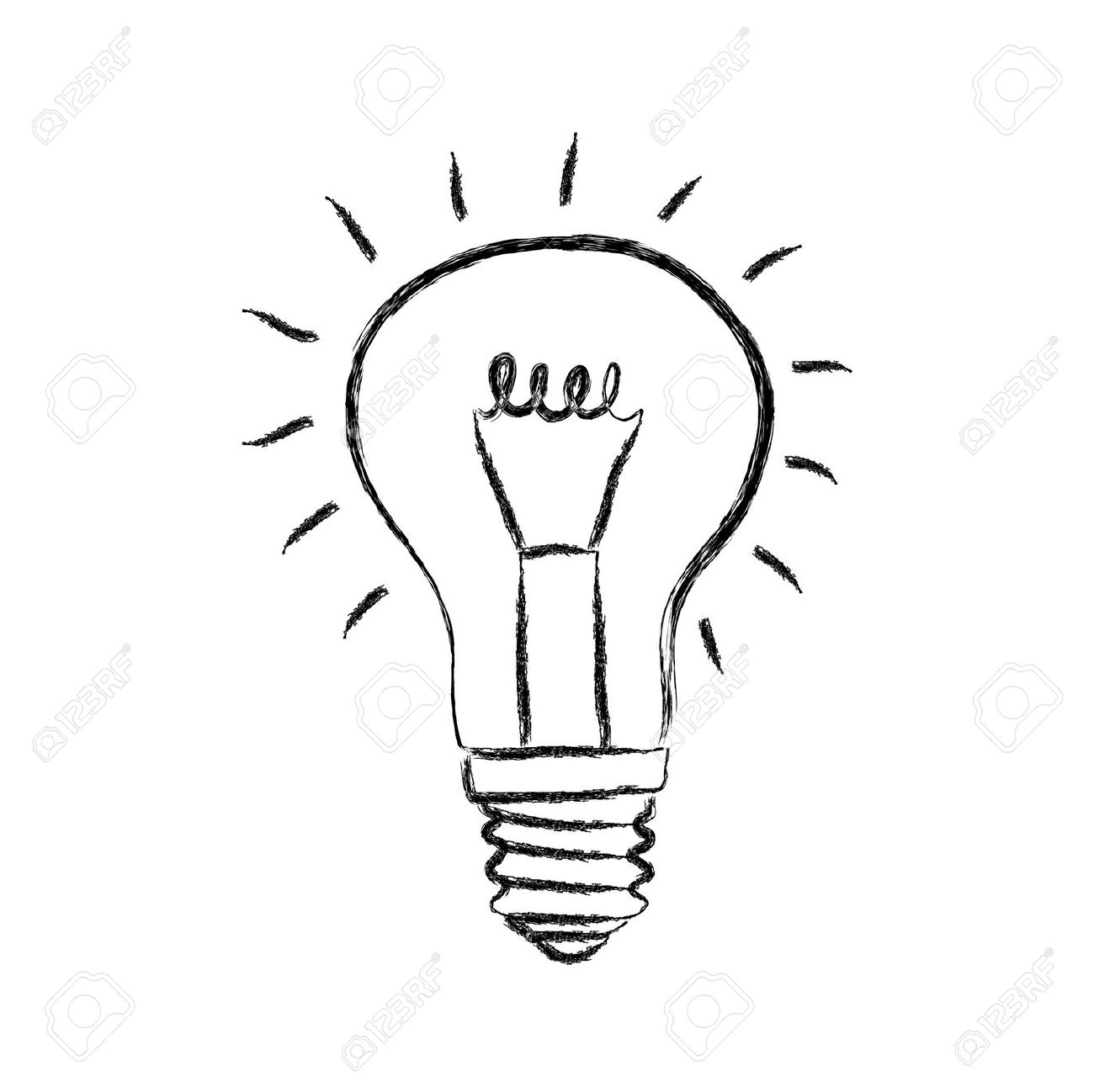
Article #2. Nordmark, Susanna, and Marcelo Milrad. "Influencing Everyday Teacher Practices by Applying Mobile Digital Storytelling as a Seamless Learning Approach." The Mobile Learning Voyage-From Small Ripples to Massive Open Waters. Springer International Publishing, 2015. 256-272.

All teachers reported that the levels of pupil motivation, interest, focus and accomplishment had skyrocketed, and even though some of the teachers had been reluctant towards TEL efforts before taking part in this study, all of them now felt confident and relaxed using the mDS tools and method on their own in various learning situations.

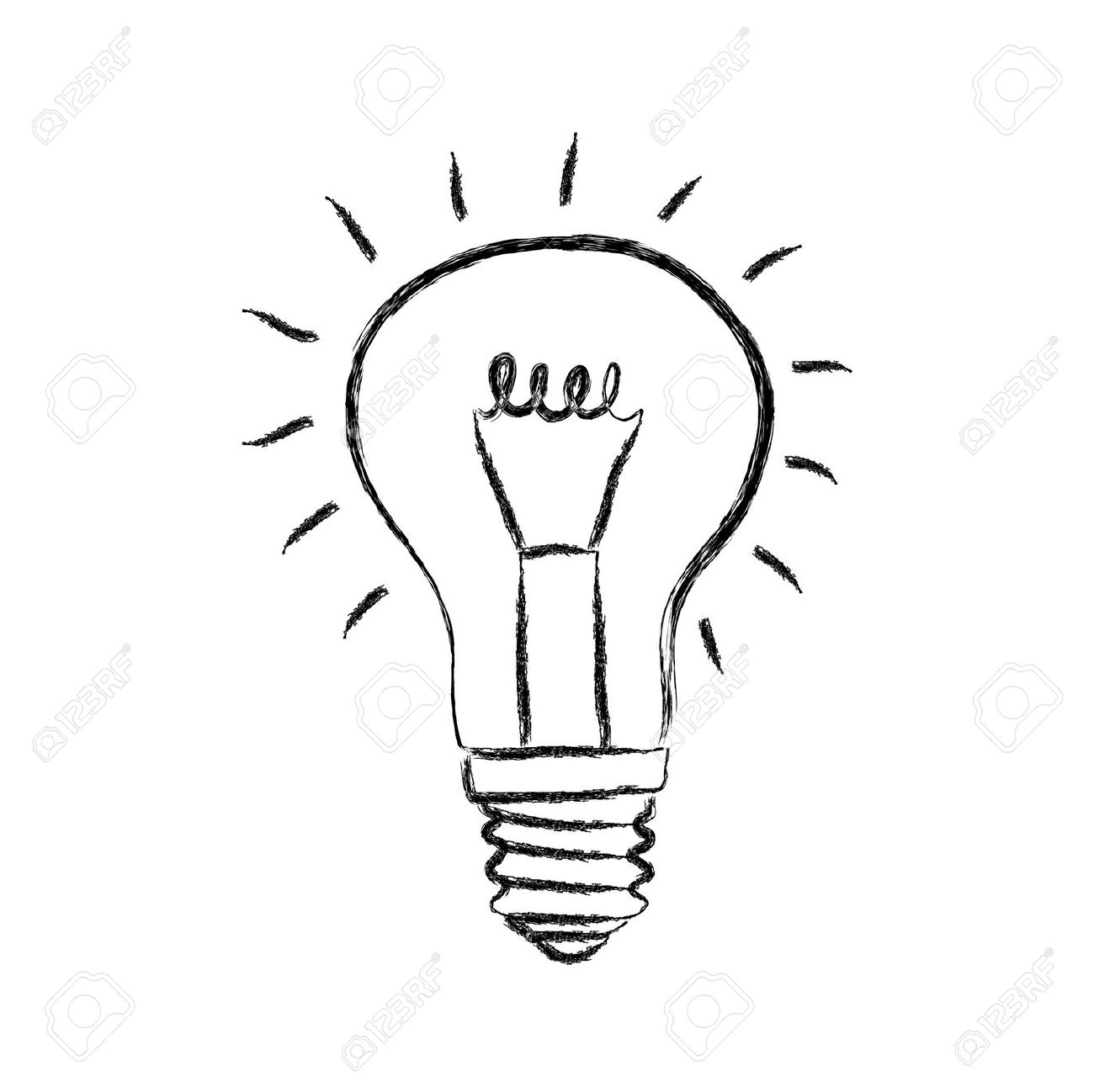
Accepted Paraphrasing

Sample

*Digital storytelling in schools, contibutes to the innovative and motivational element in English learning (Gimeno-Sanz, 2015), it elevated student’s motivation and thus improved their achievement (Nordmark et al., 2015).*



\*Caution:  **Plagiarism** is to use the words or ideas of another person as if they were your own words or ideas

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\*Caution:  **Plagiarism** is a serious offence in academic world