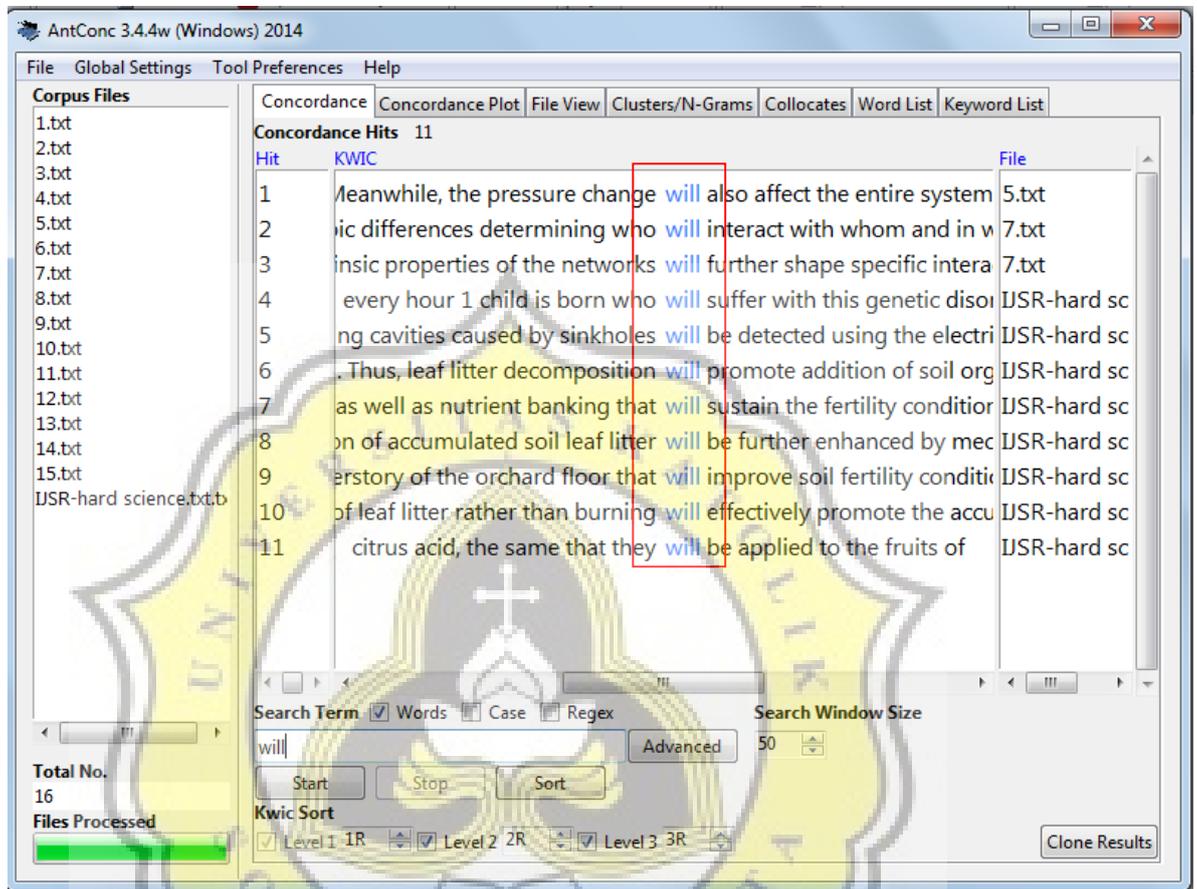


APPENDICES

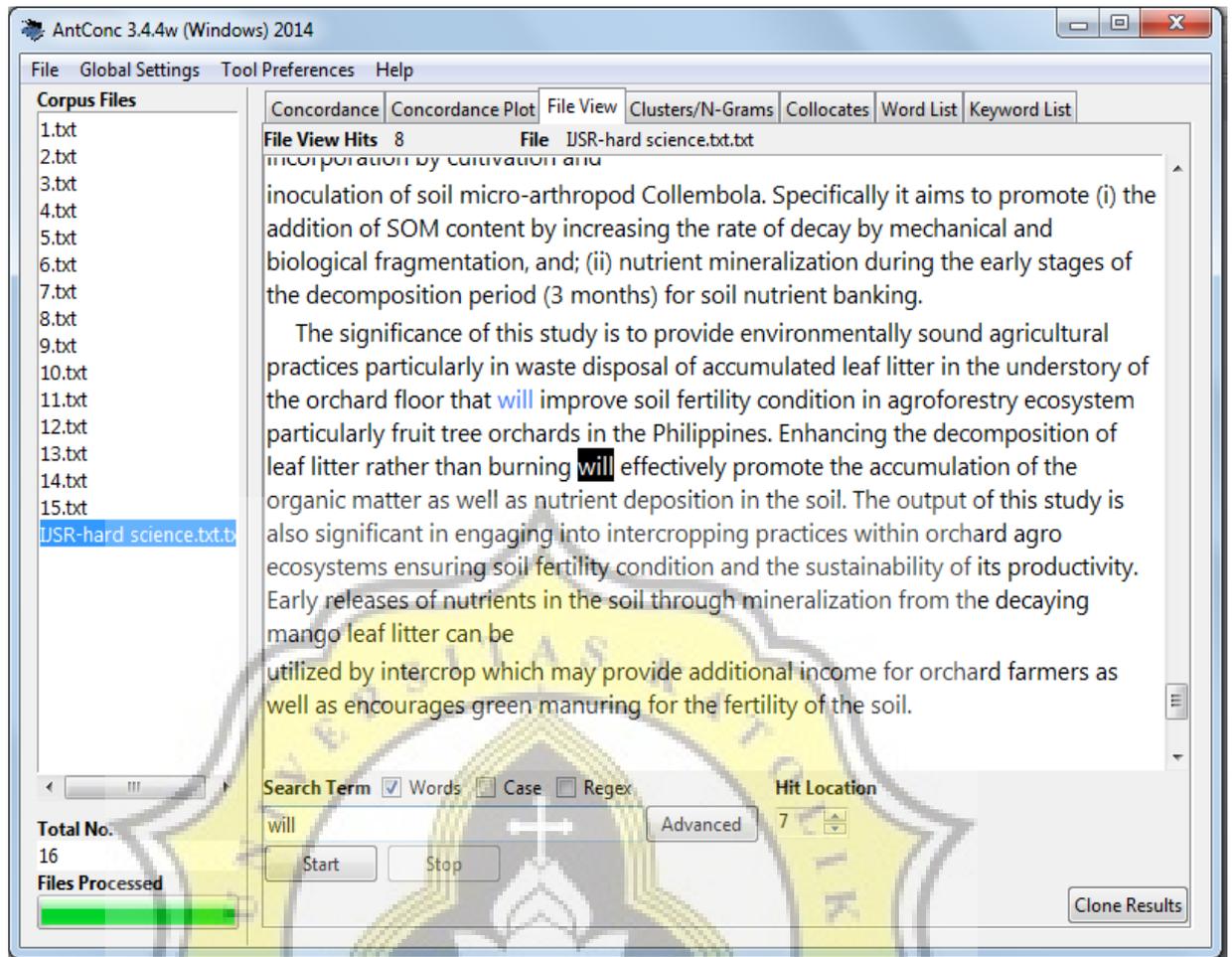


Appendix A:

A Sample of Data Analysis in AntConc Application



The use of AntConc application in this study is very helpful for the writer. It helps the writer counting the amount of hedges used in the soft and hard science data analysis. For example, as shown in the picture above, the writer wanted to find out how many times the hedges *will* (in the red circle) was used in hard science data. Then the results show that there were 11 items of *will* found in hard science data. Each items of *will* was displayed in the concordance window (in the red rectangle).



By using AntConc application, the writer can also see how the words were used contextually. A picture of AntConc application above shows the sentences where the words *will* belong to. To show up the window as shown in the picture, click “file view” on top of the box. Then, after finding where the hedge words were used, the writer could analyze the function of the related hedges in context.

As an example, the word *will* that blocked and circled there can be used to show any possibility in the future. In another point of view, the writer might want to decrease his/her responsibility on the statement, so the word *will* there can function as a shield for him/her.

Appendix B:

Refined Data of Soft Science Research Article

Within the field of K-12 education, there has been a call for using student-centered approaches across different subject areas, including science. The aim of this movement is to develop 21st century citizens that are capable of engaging in critical thinking and, thus, becoming influential members of society (Barron & Darling-Hammond, 2008). This requires that education shift from traditional teaching methods to methods that require students to engage in authentic, real-world learning tasks (Buchanan, Harlan, Bruce & Edwards, 2016). One way to achieve this is through inquiry-based learning (IBL; Buchanan et al., 2016). IBL approaches have been associated with higher levels of academic achievement and conceptual understanding (Minner, Levy & Century, 2009), content retention (Donald, Bohm & Moore, 2009), critical thinking skills (Fu & Liu, 2016) and scientific literacy (Basaga, Geban & Tekkaya, 1994). When compared to traditional teaching methods, they have been shown to be more effective (Aktamis, Hiçde & Özden, 2016).

Using technology in combination with IBL has the potential to enhance engagement in the learning process and significantly improve student growth and learning (Cool, 2015). Among the technological tools that can be integrated with IBL is the virtual laboratory (V-Lab), a computer-based online platform that involves virtual simulations of science processes or explanations of topics (Maldarelli et al., 2009). V-Labs are believed to support IBL in learning science as they offer better opportunities for understanding and clarification of abstract and complex scientific processes and concepts (Doukeli, 2012). One abstract concept in science that students find particularly difficult to learn is that of biotechnology, including genetic engineering (Chen & Raffan, 1999; Özel, Erdoğan, Uşak & Prokop, 2009). Biotechnology is defined as the use of biological processes, organisms or systems to create products that improve the standard of human life (Goldberg & Williams, 1991).

The new Lebanese curricula developed in 1997 included the domain of biotechnology as part of the secondary curriculum. Inquiry-based approaches can be effective in teaching this content because it allows students opportunities to engage in critical thinking skills as well as follow the same scientific processes that are used in the field. Learning materials used in scientific inquiry must be interesting and appealing to students (Gillies & Nichols, 2014). Nowadays, students are becoming more and more technologically savvy. Therefore, using technology in the classroom may be a way to get them more engaged, especially with a topic with which they are not very familiar (Rosenbaum, Klopfer & Perry, 2007). In addition, teaching biotechnology involves experimental methods that are not capable of being implemented in a traditional laboratory due to practical and ethical reasons. The use of VLabs can be helpful in addressing these limitations; however, it is evident that science classrooms in Lebanon lack the use of technology in ways that promote scientific processes and skills (Chaaban & Moloney, 2016). In fact, most Lebanese schools seem to apply a traditional method of teaching where the students are not involved in the learning process and they are only receivers of information (Abdel-Khalik et al., 2004). Thus, the current study aims to study the effect of using V-Labs within an IBL framework on 11th grade Lebanese students' achievement in genetic engineering. Since findings of gender differences on the impact of V-Labs has been inconsistent (e.g., Blonder et al., 2015; Ješková et al., 2016), this study also aims to check for the difference between the academic achievement of males and females.

Appendix C:

Refined Data of Hard Science Research Article

Esophageal cancer (EC) is known as one of the most deadly malignancies affecting humans. Esophageal cancer is an aggressive disease with features of poor prognosis and increasing incidence. It is an important cause of cancer related deaths in the world. Five year survival rate is estimated only about 10 % which ranges from 15% to 40% after surgery. EC presents with two distinct histopathologic types: squamous cell carcinoma and adenocarcinoma. The occurrence of type of cancer occurs in a given patient depends on several factors like lifestyle, socioeconomic status, and environmental factors.

Esophageal carcinoma affects more than 450000 people worldwide and the incidence is rapidly increasing. EC is four times more common and slightly more lethal in men than in women. In recent decades, a profound increase in incidence rates of adenocarcinoma is seen in United States, along with many other Western countries. Whereas squamous cell carcinoma continues to predominate worldwide.

Worldwide predominant histologic type of esophageal cancer is SCC, more common among black population, with a peak in seventh decade of life. An esophageal “cancer belt,” primarily squamous cell cancers, is the area extending from northeast China to the Middle East. Most adenocarcinomas arise in the distal part of esophagus, are more common in white men. Barrett’s esophagus is commonest precancerous condition, risk of developing cancer in patients with Barrett’s esophagus is 50 to 100 times higher than general population.

Tobacco and alcohol consumption are known to be primary causes of squamous cell carcinomas, whereas obesity is one of the emerging risk factor for esophageal adenocarcinoma. Barrett’s esophagus is another clearly recognized risk factor for EC .Cigarettes, alcohol, red meat, hookah smoking, nass use (a chewing tobacco product), drinking hot tea, opium

consumption, poor oral health, low intake of fresh fruit and vegetables, and low socioeconomic status also have been associated with a higher risk of esophageal SCC.

Patients may present with various symptoms depending on progress of the disease. Dysphagia, weight loss, symptomatic gastroesophageal reflux, odynophagia, dull retrosternal pain, bone pain secondary to bone metastases, and cough or hoarseness secondary to paratracheal nodal or recurrent laryngeal nerve involvement, are various presentations. Diagnosis is made by upper endoscopy and a biopsy to establish a tissue diagnosis. Ca esophagus metastasizes via blood, lymphatics and locally. The sentinel node is the first lymphatic drainage area from the primary tumor, and could be the first site of micrometastasis. Esophageal cancer metastasizes to different regional and distant lymph nodes depending on the primary site, and early esophageal cancer invading the muscularis mucosae may have more than one lymph node metastasis. Various modes of treatment available depends on stage of the carcinoma, which includes Surveillance, Ablative Methods including Endoscopic Mucosal Resection and Minimally Invasive Esophagectomy, surgical Resection including Transhiatal Esophagectomy, Transthoracic Esophagectomy, Extended Esophagectomy, Adjuvant Therapy, Preoperative Chemotherapy.

The presence of lymph node (LN) metastases in patients with esophageal cancer has important prognostic implications. Despite the prognostic significance of identifying LN metastases in patients with esophageal cancer, the minimum number of LNs that need to be removed during surgery is controversial. There have been two primary opinions in recent years. Some agree with a three-field lymphadenectomy and hold that it is essential to achieve improved postoperative survival by resecting adequate lymph nodes in the neck because cervical lymph node metastases have been documented as approximately 20% to 40%. Others argue that two-field lymphadenectomy is enough to dissect all the possible metastatic lymph nodes, including

recurrent nerve chain lymph nodes from the superior mediastinum up to the neck, with less perioperative complications and the same outcome. A consistent lymphadenectomy strategy has yet to be established. Some recent studies have addressed staging issues in patients with esophageal carcinoma, including the prognostic significance of the extent of LN involvement the number of LNs examined, and the proportion of positive LNs. However, till date there is no clear cut recommendation about the extent of LN dissection and importance of ratio of positive LN status on survival in EC.

Current study is aimed at deciding the prognostic significance of ratio of metastatic LN to total LN harvested during surgery in patients having SCC of esophagus.

