# Student Worksheet: Analyzing a Journal Article

***Please read the assigned journal article and answer the following questions. Review the "Paraphrasing" module as needed to help you understand how to paraphrase to avoid plagiarism.***

**Your name:** Gherghel Denisa-Maria **Date:** 14/12/2019

**Journal article title:** Development of a multi-agent system simulation platform for irrigation scheduling with case studies for garden irrigation

| Step 1. What is the purpose/hypothesis/aim/objective of the study? | |
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| **a. Write down the exact statement in which the authors describe what they were testing. (Hint: This information may be provided in the article as a purpose statement or as a hypothesis). Include quotation marks around the exact wording, and indicate page number(s).** | "This work reports the design and development of a decision support system for managers that helps to establish the optimal irrigation policies or the best organization of a garden in different zones in order to optimise the global consumption of water." [page 1] |
| **b. Now describe the purpose of the study (as you understand it) in your own words.** | The purpose of the study is to develop a simulation system that will suggest the best irrigation solution for a green zone. The best solution is considered to be one that has the minimum consumption of energy and water. |
| **c. What was the "gap" in the research that the authors were trying to fill by doing their study?** | The use of multi-agent systems was not a novelty at the time the research for this paper was done. However, what this paper tries to accomplish is the creation of a system that would take into consideration as many aspects as possible, such as the weather or the consumption of water. |

| Step 2. What is/are the major finding(s) of the study? | |
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| **a. Make some notes about the authors' <u>major</u> conclusions or findings as written in the article. Include quotation marks whenever you use their exact wording, and indicate page number(s).** | "The most important aspects of this agent-based simulation are its modularity and flexibility, as each zone/sprinkler/plant species is modelled independently. These properties allow simulating the behaviour of the modelled garden with different values in the allowed parameters." [page 13] |
| **b. Now write those conclusions (as you understand them) in your own words.** | The researchers found a way of discovering and simulating the best configuration for a garden, so that the use of resources, such as water and energy, would be minimized. The way the system was developed enables the users to test it with different values and nevertheless obtain the best configuration. |
| **Step 3. How did the authors test their hypothesis?** | |
| **a. Briefly summarize the main steps or measurements that the authors used in their methods. Try to explain in your own words as much as possible.** | The researchers used three case studies, each of them emphasizing different aspects important to the system:<br>1. determination of the best irrigation time for a green space and the calculation of errors "between the optimal and actual humidity for each plant" [page 8]<br>2. how much would the replacement of a static, fixed irrigation system with a solution determined by the system improve the use of resources<br>3. determination of a configuration for a complex green space. |
| **b. Do the authors suggest any problems or limitations with their methodology? Do you see any problems or limitations with their methodology?** | The authors do indicate some limitations with the solution. One of them, which I also consider quite important, is the fact that the simulation system works offline and it doesn't take into consideration real-time data. |
| **c. How did the authors analyse their data? What test/s did they use?** | Practical tests and mathematics for the calculation of absolute errors. |

| Step 4. How reliable are the results? | |
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| **a. Do the authors suggest any problems with the study that could lead to unreliable results?** | The authors don't suggest any problems with the study. |
| **Step 5. Based on your analysis, are the claims made in this journal article accurate?** | |
| **a. Do the conclusions made (about the results) by the author make sense to you? Are the conclusions too broad or too narrow based on what was actually done in the study?** | I consider that the conclusions are specific enough and are well documented and explained. |
| **b. Based on the accuracy of the methodology and the reliability of the results as described in Steps 3 and 4, do you think the conclusions can be believed?** | I would say that the conclusions can be believed. |

| Step 6. What is the importance of this scientific work? | |
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| **a. Write (in your own words) the significant contributions of the experimental work in this journal article as reported by the authors.** | The significant contribution done by this work is the resulted system that cand determine one of the best configurations for a green space, to reduce unnecessary waste of water.<br>It can determine the best results from big sets of possible c ombinations (as presented in the case study number 4, with 294,912 different possibilities), and can be parametrized quite a lot, due to its modularity and flexibility. |
| **b. Re-read your notes and explain why you think this is**<br>○ **a strong or weak scientific article**<br>○ a **strong or weak scientific study** | I consider this to be a strong scientific article. The researches study in detail the state of art regarding the use of multi-agent systems in agriculture, especially in irrigation problems. The proposed solution is described in detail, from the requirements and the analysis phase to the design phase. Even the validation was thoroughly done, identifying 3 different case studies that would highlight the possibilities this system has to offer. |

## Resources for students:

1. If you are struggling with plagiarism and paraphrasing, then refer to our online "Paraphrasing" module.
2. If you are struggling with figuring out how to read the information, then refer to the section on active reading in the "Learning from Textbooks" section of A Guide for University Learning.
3. If you want to learn how to find more academic information on other science topics, then refer to our online "Searching for Scientific Journal Articles" module.