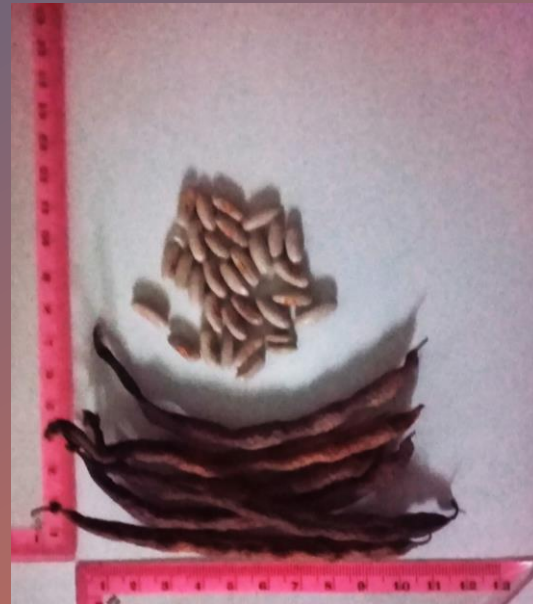


PROGRAMS OF FINAL EXAMINATIONS AND STUDENT PROJECT PLANS DRAFTED BY USING AI AND REFERENCING GENERATORS



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Highlights

- **Aim:** to create the program of the final examination and design the plan of the future student project via requesting and receiving prompt responses from available AI platforms coordinated or independent from the MS Teams format (Bing or Copilot).
- **Tasks:** 1) explain blueprints (algorithms) of the stepwise compilation of the program for the finals;
- 2) apply the free Harvard referencing generator for compiling the reference list;
- 3) receive and check a draft AI-assisted plan of student's project.
- So, our study highlights the AI-assisted program of the final examination or student's research project in consent with a syllabus.
- This approach enables quick gathering relevant information on AI platforms, promotes further editing, and amending collected AI- answers, which are completed by powerful automated referencing generators. Such approach speeds up designing final programs and research projects, along with their enrichment by a range of supplementary sources including databases, maps, charts and images, patents, reports, speeches, videos, websites, etc.

A set of innate or acquired features and habits necessary for successful AI implication in teaching and learning (our opinion based on own experience)

- I, ability to improvise, empiricism, and a penchant for experimentation;
- II, skills of combining conventional methods of teaching with those new;
- III, critical view on some outcomes obtained with AI;
- IV, creative attitude to mixing forms, methods, software programs and types of proceedings to be handled throughout this specific exploration.



Materials and methods

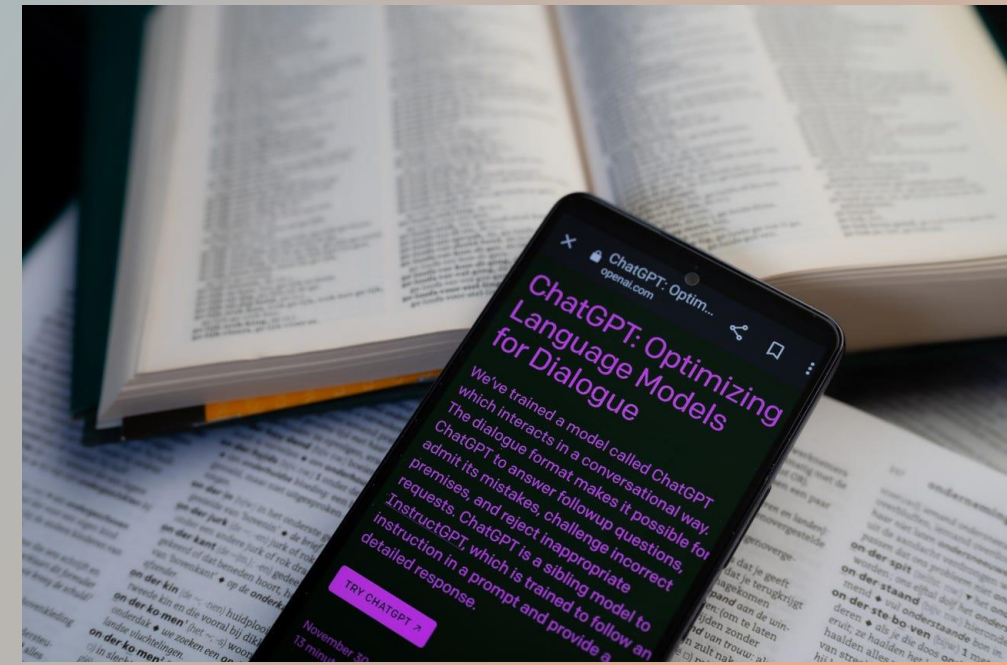
- The course ID 100042 of the Biology Curriculum for MS Studies titled “The Gene Expression and Mechanisms of Action of Hormones” was used as the experimental template for this study.
- Major digital resources to creating the blueprints indicated above were as follows:
- Bing <https://www.bing.com/?ai> [4]
- Copilot <https://www.microsoft.com/en-us/microsoft-copilot> [5]
- Harvard Referencing Generator <https://www.mybib.com/tools/harvard-referencing-generator> [6].
- The plan drafting for the student project was carried out using the Copilot chat (<https://copilot.microsoft.com/?culture=en-us&country=us>).
- The data obtained were carefully edited, amended, and completed manually by the instructor, and discussed by the authors and faculty members before submission.
- It is recommended that the data obtained would be verified using alternate AI chats and automated referencing systems.



Algorithm of stepwise activities of creating the program of final examinations

- **Assignment 1.** Compile twenty questions to the Course on Gene Expression and Mechanisms of Action of Hormones.
- **Answer 1.** Sure, herewith twenty questions on gene expression and mechanisms of action of hormones (the list of 20 questions isn't shown on the slide).
- **Assignment 2.** Based on these questions design the program for the final examination supplied with the list of references.
- **Answer 2.**
 - Here is a possible program for the finals based on the questions generated above:
 - **Program of Final Examinations on the Course of Gene Expression and Mechanisms of Action of Hormones:**

1. Overview on hormones and their classification in animals and plants
2. Basipetal and acropetal phytohormonal regulation
3. Properties of hormones and plant hormones
4. Characteristics of five major classes of plant hormones
5. Explanation the role of auxins in plant growth and development
6. Description of the role of cytokinins in plant growth and development
7. Indication of the role of gibberellins in plant growth and development
8. Clarification of the role of abscisic acid in plant growth and development
9. Elucidation of the role of ethylene in plant growth and development
10. Highlighting the role of brassinosteroids in plant growth and development



List of references generated with help of AI

- **Literature and web resources:**
- **References**
- 10 Goel, A., Ncho, C. M., & Choi, Y. H. (2021). Regulation of gene expression in chickens by heat stress. *Journal of animal science and biotechnology*, 12(1), 1-13.
- 11 Waadt, R., Seller, C. A., Hsu, P. K., Takahashi, Y., Munemasa, S., & Schroeder, J. I. (2022). Plant hormone regulation of abiotic stress responses. *Nature Reviews Molecular Cell Biology*, 23(10), 680-694.





Application of the free Harvard Referencing Generator

- Go to: <https://www.mybib.com/tools/harvard-referencing-generator>
- Press on the knob “Website”, “Book” or “Journal”
- We used the “Journal” knob.
- Choose the referencing style (APA 6, APA 7, Chicago, Harvard, Harvard (Australia), MLA 8, MLA 9)
- We chose APA7.
- Put a question (we chose Q 26 “**plant hormones in plant abiotic stress responses**” from the generated program of the finals) in the search window.

Application of the free Harvard Referencing Generator (cond.)

You will receive the list of journals (25 citations), only 2 of which are displayed below:

1. The Crosstalks Between Jasmonic Acid and Other Plant Hormone Signaling Highlight the Involvement of Jasmonic Acid as a Core Component in Plant Response to Biotic and Abiotic Stresses.

By Jing Yang, Guihua Duan, Chunqin Li, Lin Liu, Guangyu Han, Yaling Zhang, Changmi Wang Year: 2019 Container: Frontiers in Plant Science Volume: 10 DOI: 10.3389/fpls.2019.01349

2. How plants handle multiple stresses: hormonal interactions underlying responses to abiotic stress and insect herbivory

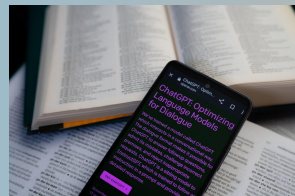
By Duy Nguyen, Ivo Rieu, Celestina Mariani, Nicole M. van Dam Year: 2016 Container: Plant Molecular Biology Volume: 91 Issue: 6 Page: 727-740 DOI: 10.1007/s11103-016-0481-8

Application of the free Harvard Referencing Generator (cond.)

N.B.

By pressing the knob “More” you can also find other types of proceedings:

Artwork, Blog Post, Book, Book Chapter, Book Review, Conference Paper, Database Article, Dictionary Entry, E-book, Encyclopedia Entry, Film/Movie (DVD, etc), Image, Interview, Journal Article, Legal Bill, Legal Case, Legislation, Magazine Article, Map, News Article, Patent, Personal Communication, Regulation, Report, Review, Song, Speech, Standard, Thesis (or Dissertation), TV/Radio Broadcast, Video, Website, Write/Paste Citation.



Other Referencing Methods



- 1 Web of Science
- 2 Scopus
- 3 Google scholar

Advantages :

Relevant, updated, versatile, presence of the number of citations for each article.

Drawbacks:

Manual referencing list, time-consuming referencing work in case of slow internet, sometimes inability to choose a proper referencing form.

Algorithm of drafting the plan of the student's project

- **Assignment 3.** Compile a draft plan for the student project titled: “Investigation on the role of plant hormones in plant biotic stress responses” (**question 27 of the final program**).

Answer 3. The project titled “Investigation on the role of plant hormones in plant biotic stress responses” aims to study the effect of plant hormones on the response of plants to biotic stress. The project will be conducted in the following steps:

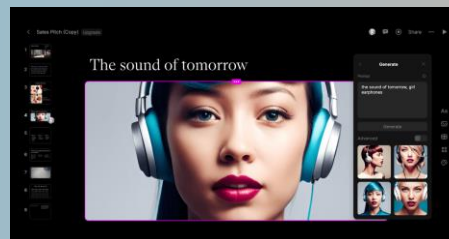
- **Introduction:** This section will provide an overview of the project and its objectives. It will also include a brief introduction to plant hormones and their role in plant growth and development.
- **Literature Review:** This section will review the existing literature on the topic of plant hormones and their role in plant biotic stress responses. It will also discuss the different types of plant hormones and their functions.
- **Methodology:** This section will describe the methodology that will be used to conduct the research. It will include details on the experimental design, the plant species that will be used, and the different treatments that will be applied.
- **Data Collection and Analysis:** This section will describe the data that will be collected during the experiment and the methods that will be used to analyze the data.
- **Results:** This section will present the results of the experiment and the analysis of the data. It will also include a discussion of the findings and their implications.
- **Conclusion:** This section will summarize the main findings of the study and their significance. It will also discuss the limitations of the study and suggest areas for future research.
- **(The list of enclosed AI-generated literature is omitted).**

Algorithm of drafting the plan of the student's project

- **Assignment 4.** Will you propose a more detailed plan of the project suggested above?

The platform will return more detailed research plan, particularly mentioning Methodology and data collection and analysis shown herewith:

- **Methodology:** This section will describe the methodology that will be used to conduct the research. It will include details on the experimental design, the plant species that will be used, and the different treatments that will be applied. For example, the experiment could involve growing plants under different conditions of biotic stress, such as exposure to pathogens or pests, and measuring the levels of different plant hormones in response to these stressors.
- **Data Collection and Analysis:** This section will describe the data that will be collected during the experiment and the methods that will be used to analyze the data. For example, the data collected could include measurements of plant growth, hormone levels, and gene expression.



Conclusion



1. Initiation of AI-assisted teaching or learning processes requires a range of innate or acquired features and customs (I, readiness to improvise and conduct empirical studies, the inclination to keep experimenting; II, ability “to breed” conventional and modern tools of teaching; III, critical perception of some results produced by AI; IV, creativity in combining forms, methods, software programs and types of proceedings which lead to the final product, a program of the final examination or a plan of the student research project).
2. The combination of the instructor’s and student’s attempts allows to promptly draft programs of final examinations and plans of student research projects assisted by handling AI templates and related chatbots. It is advised to check the data obtained by using other AI chats and automated referencing systems.
3. This work helps gathering, editing, and completing the administered AI-answers, empowered by automated reference generators.
4. All aforesaid measures may be also enhanced by rich sources of information offered by the reference generator (namely books, journals, database sets, maps, charts and images, legislation, patents, reports, speeches, videos, websites, etc.), as other bibliography generators and related facilities.

Literature and web resources

1. Koć-Januchta M. M. et al. Engaging with biology by asking questions: Investigating students' interaction and learning with an artificial intelligence-enriched textbook //Journal of Educational Computing Research. – 2020. – T. 58. – №. 6. – C. 1190-1224.
2. Lee I., Perret B. Preparing High School Teachers to Integrate AI Methods into STEM Classrooms //Proceedings of the AAAI Conference on Artificial Intelligence. – 2022. – T. 36. – №. 11. – C. 12783-12791.
3. Shin W. S. A case study on application of artificial intelligence convergence education in elementary biological classification learning //Journal of Korean Elementary Science Education. – 2020. – T. 39. – №. 2. – C. 284-295.
4. Bing <https://www.bing.com/?ai>
5. Copilot <https://www.microsoft.com/en-us/microsoft-copilot>
6. Harvard Referencing Generator <https://www.mybib.com/tools/harvard-referencing-generator>
7. <https://studyinternational.com/news/best-bibliography-generators/>

