Assessment Guidelines for Experimental Design (B1)

Mark range	Quality of work	Performance
9-10	Excellent	The report shows most of the good performances and a few excellent performances.
6-8	Good	The report shows most of the basic performances and some good performances.
3-5	Fair	The report shows some basic performances and a few good performances.
1-2	Poor	The report shows a few basic performances.

	Basic Performance	Good Performance	Excellent Performance
Dependent variable (DV) & independent variables (IV)	1. Identify the DV and IV	9. Explain why the variables are DV and IV in the investigation	
		10. Identify multiple IV/DVs	
	2. State the methods of measurement/manipulations.	11. Explain how variables are connected with the manipulation and measurements	20. Explain the limitations of the measurement method and for the variable(s)
			21. Discuss the strengths and limitations of the alternative measurement method(s)
	3. Predict the results		
Control variables (CV)	4. Identify some CVs	12. Identify important CVs	22. Explain why some important CVs need to be controlled
	5. Identify the control set-up (s)	13. Explain why the control set-up(s) (e.g. positive and negative control) is/are needed	23. Discuss the limitations of the control set-up(s)
Measurement	6. Identify important measurement errors	14. Suggest ways to reduce measurement errors / enhance reliability, e.g. repeated measurements	24. Explain why some procedures can reduce measurement errors (e.g. repeated measurement for reducing random errors; calibration for reducing systematic errors; involving one person to observe the results to reduce subjectivity)
Sampling (if any)		15. Identify sampling issues / errors	25. Suggest and explain ways to reduce sampling errors (e.g. increasing sample size, random sampling)
Hypothesis (if any)	7. Identify the hypothesis tested	16. Distinguish the hypothesis from the observable predictions derived from it	26. Assess the extent the prediction gives support to the hypothesis
Assumptions (if any)			27. Identify the major significant assumptions of the design
Others		17. Explain why a specific step is conducted.	
	8. State briefly the overall experimental design and its underlying biological principle and / or concepts	18. Explain how the overall experimental design is related to underlying biological principle and / or concepts	
		19. Suggest alternative designs	28. Discuss the limitations and strengths of alternative designs (e.g. within subject and between subject design)

實驗設計(B1)的評分準則

分域	作業水平	相關表現
9-10	優異	實驗報告顯示大多數的良好表現及少量的優秀表現。
6-8	良好	實驗報告顯示大多數的基礎表現及部分的良好表現。
3-5	平平	實驗報告顯示部分的基礎表現及少量的良好表現。
1-2	差劣	實驗報告顯示少量的基礎表現。

	基礎表現	良好表現	優秀表現
因變量及自變量	1. 辨別因變量及自變量	9. 解釋為什麼這些變量是因變量及自變量	
		10. 辨別多於一項的因變量/自變量	
	2. 寫出量度/處理變量的方法	11. 解釋變量如何與處理及量度方法相關聯	20. 解釋處理及量度變量方法的限制
			21. 討論個別量度方法的優點及限制
	3. 預測結果		
控制變量	4. 辨別一些控制變量	12. 辨別一些重要的控制變量	22. 解釋為什麼需要控制某些重要變量
	5. 辨別對照裝置	13. 解釋為什麼需要這(些)對照裝置(例如:陽性對照陰性對照)	23. 討論對照裝置的限制
量度	6. 辨別重要的量度誤差	14. 提出減低量度誤差的方法/ 增加量度可靠性的方法(例如:重複量度)	24. 解釋為什麼某些步驟能減低量度誤差(例如: 重複量度以減低隨機誤差、調控儀器以減低系統性的誤差、多於一人觀察以減少主觀性)
取樣 (如有)		15. 辨別取樣問題/誤差	25. 提出及解釋減低取樣誤差的方法(例如:增加取樣數量、隨機取樣)
假說 (如有)	7. 辨別所測試的假說	16. 分辨假說及由假說推論的預期結果	26. 評估預期結果有多大程度支持該假說
假設 (如有)			27. 辨別設計的重要假設
其他		17. 解釋為什麼要進行某特定步驟	
	8. 粗略寫出整個實驗設計及其背後的生物學原理/概代念	18. 解釋整個實驗設計如何與其背後的生物學原理/概念相關聯	
		19. 提出其他設計	28. 討論其他設計的好處及限制(例如:被試內設計及被試間設計)