



Combination of Image/Pattern Recognition and Gamification: Application for Hemoglobin Type Interpretation

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Overview

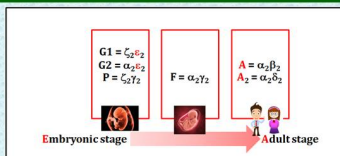
Human perception plays an important role in the area of visualization. An understanding of perception can significantly improve both the quality and the quantity of information being displayed. According to previous course of clinical hematology (academic year 2017), the students can not interpret the hemoglobin typing because they can not remember the tetramerization of each Hb during human development. Therefore, I have used the image or pattern recognition for Hb typing interpretation. Kahoot was used to evaluate the successful of this activity.

Aims and Objectives

- To apply the combination of Image/Pattern Recognition and Gamification on Hb typing interpretation.
- To evaluate the successful interpretation of Hb typing for diagnosing thalassemia and hemoglobinopathies.

Activity

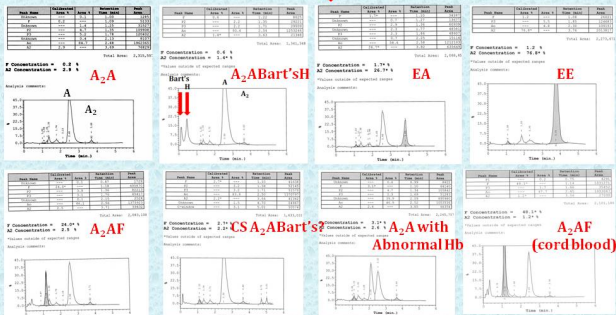
Developmental stage	Hb type	Structure
Embryonic (1)	Hb Gower 1 (4)	$\zeta_2\delta_2$ (10, 11)
	Hb Gower 2 (5)	$\alpha_2\zeta_2$ (12, 13)
	Hb Portland (6)	$\zeta_2\gamma_2$ (14, 15)
Fetus (2)	Hb F (7)	$\alpha_2\gamma_2$ (16, 17)
Adult (3)	Hb A (8)	$\alpha_2\beta_2$ (18, 19)
	Hb A ₂ (9)	$\alpha_2\delta_2$ (20, 21)



Visualization and Gamification



Hb typing interpretation



Evaluated by Kahoot!



Outcome

Statement	Mean±SD
This activity can improve the recognition	4.28±0.83
This learning activity makes you enjoy and happy	4.23±0.84
This learning activity is applicable for this topic	4.26±0.82
Suitable time duration for this learning activity	4.15±0.81
Suitable place (classroom) for this learning activity	4.28±0.76
Overall satisfaction of this activity	4.31±0.73



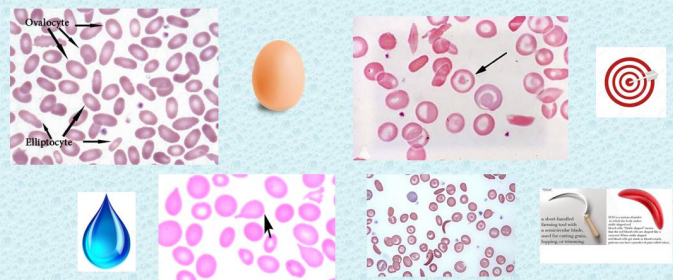
MTH60-233_RBC Met&Dest	
Played on	21 Mar 2019
Hosted by	Manit Nuinoon
Played with	91 players
Played	8 of 8 questions
Overall Performance	
Total correct answers (%)	95.24%
Total incorrect answers (%)	4.76%
Average score (points)	8150.49 points

Impact

- This activity can help the students who have the low recognition level and low performance students.
- This activity can improve the scores (post-test and examination).
- The students can integrate the basic and advanced knowledge for laboratory diagnosis.

Future Development of Project

This activity could be applied on other course of clinical hematology or other topics. Hb type pattern (both qualitative and quantitative data) can be combined to generate the specific pattern of each type of thalassemia and/or hemoglobinopathies.



References

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