

Teaching Biology Using Contextualized Learning Kit

Janin C. Borre, Bicol University, Philippines

The Asian Conference on Education & International Development 2019
Official Conference Proceedings

Abstract

This study determined the effect of the developed lessons in Biology using the Contextualized Learning Kit (CLK) for Grade 8 students. The features of the CLK are the following: (a) Flipped Classroom Mode of Delivery, (b) Student-friendly Contextualized Learning Kit, (c) 21st Century Skills Development, and (d) Highly Visual Instructional Material. A pretest-posttest quasi experimental design was employed wherein the two groups of respondents were purposively selected. Qualitative and quantitative methods were utilized in analyzing the results during the lesson implementation. Qualitative data were obtained from the students' journals, focus group discussion (FGD), and remarks on the observation sheets while data obtained from the pretest and posttest scores, level of acceptability, and attitude survey responses were analyzed quantitatively. Results show that students in the experimental group had a high level of acceptability of the CLK, scored higher in the post-test and had a more positive attitude in Biology than the comparison group.

Keywords: contextualized, flipped classroom, 21st century skills development, highly visual instructional material

iafor

The International Academic Forum
www.iafor.org

Introduction

Learners vary in the way they grasp the content of the lessons and this is where individual differences come in (Jonassen & Grabowski, 2012).¹ Being aware of the individual differences present among learners, educators and instructional designers will become more sensitive in the way they teach their lessons and design their instructional materials. Hence, if teachers utilize new methods and instructional materials in teaching inside the class, students will be less bored and instead more motivated to learn.

The study utilized the pretest-posttest quasi-experimental design to test the effect of the five developed lessons in Biology using the Contextualized Learning Kit (CLK) on the Grade 8 students' conceptual understanding, 21st century skills development, and their attitude towards Biology. The researcher included the four features of the developed lessons using the CLK: (1) flipped classroom mode of delivery. The teacher gave the CLK few days or a day before the lesson so that students will have time to read and have prior knowledge. In class, group activities were given and the teacher served as facilitator. Students helped each other, constructed ideas, and shared their opinions regarding the tasks. The teacher gave input or additional information so that students will achieve deeper understanding and provide guidance to avoid misconceptions of the concepts. This constructivist approach gave more chance and time for the students to construct their own ideas. This allowed the teacher to differentiate her instructional method from the usual traditional methods (i.e. lecture). (2) Contextualized Content. In contextualization of lessons, the researcher used local and familiar events, situations, and examples to tap students' prior knowledge to understand the lessons better. The researcher also presented the lesson in a conversational way through anecdotes and humorous examples. The language and sentence construction used were appropriate for the students' age. (3) Highly Visual Presentation. The researcher adapted related images and diagrams for students to understand the lessons well through highly visual presentation. (4) 21st Century Skills Development. The 21st century learning skills were defined as the ability to collect and/or retrieve information, organize and manage information, evaluate the quality, relevance, and usefulness of information, and generate accurate information using existing resources (Pacific Policy Research Center, 2010).² There are four C's (4C's) under the 21st century learning skills namely: communication, collaboration, critical thinking, and creativity.

The experimental group was composed of 37 students. Before and after the intervention, conceptual understanding test and attitude survey was given to this group. The treatment introduced were the five developed lessons in Biology using the CLK. Flipped classroom methodology was implemented in this group. In this case, the CLK was given to students few days before the discussion of the lessons. In that way, students will have prior knowledge regarding the new lesson. The class time was maximized to student-centered activities where the teacher served as a facilitator and

¹ Jonassen, D. H., & Grabowski, B. L. (2012). Handbook of individual differences, learning, and instruction. Routledge.

² Pacific Policy Research Center. (2010). 21st Century Skills for Students and Teachers. Retrieved from http://www.ksbe.edu/_assets/spi/pdfs/21_century_skills_full.pdf

gave input after class activities to deepen students' knowledge. The 21st century skills or which is also known as 4Cs were integrated in class activities. The comparison group was observed in a natural classroom setting where the teacher referred to the teacher's guide for grade 8 Biology and students used their learner's module. This group was composed 30 students. Conceptual understanding test and attitude survey was also given before and after the teacher taught the five lessons in Biology. Both groups were observed by the researcher and two Science teachers.

Conclusion

The developed lessons in Biology were: Lesson 1- Explain ingestion, absorption, assimilation, and excretion, Lesson 2- Explain how diseases of the digestive system are prevented, detected, and treated, Lesson 3- Identify healthful practices that affect the digestive system, Lesson 4- Describe the transfer of energy through the trophic levels, and Lesson 5- Analyze the roles of organisms in the cycling of materials. The Level of Acceptability of the CLK has an overall weighted mean of 4.05 which is interpreted as positive. Conceptual Understanding of Biology concepts was enhanced in the experimental group than the comparison group. Figure 1 shows the comparison of the two groups.

Groups	Tests	Mean	p-value	Significant Level	Effect Size	Descriptive Interpretation
					d	
Experimental	Pre-test	22.03	0.00	Highly Significant	1.74	Huge Effect
	Post-test	33.16				
Comparison	Pre-test	20.57	0.15	Not Significant	0.19	Small Effect
	Post-test	21.37				

Figure 1. Comparison of the effect in the Conceptual Understanding Test of two groups

The 21st Century Skills namely: communication, collaboration, critical thinking, and creativity had ratings that generally fall between excellent (4) and good (3). The results of the Attitude towards Biology had a positive rating in the experimental group than the comparison group. Figure 2 shows the comparison of the two groups.

Groups	Tests	Mean	p-value	Significant Level	Effect Size	Descriptive Interpretation
					d	
Experimental	Pre-test	3.31	0.00	Highly Significant	1.14	Very Large Effect
	Post-test	3.69				
Comparison	Pre-test	3.23	0.02	Significant	0.42	Moderate Effect
	Post-test	3.31				

Figure 2. Comparison of the effect in the Attitude of two groups towards Biology

The students learn more if the presentation of instructional materials is easy to read and understand. Hands-on and minds-on activities improved the retention of the concepts. Having colorful pictures and diagrams in reading material made it more attractive and motivating to read. It helps students to visualize what they are reading. The CLK is a helpful tool not just for teachers but also for students. Through this tool, the teaching and delivery of the lesson was made fun and easy for both teachers and students.

Acknowledgments

To the Department of Science and Technology- Science Education Institute for the scholarship given to me under the National Consortium in Graduate, Science and Mathematics Education, thank you for believing in my abilities by choosing me as one of your scholars to conduct this scholarly work.

To my adviser, Dr. Maria Eden A. Ante, for her academic expertise in this field which helped me a lot in improving my thesis.

To Dr. Lorna M. Miña, Professor Jocelyn F. Goyena, Professor Daves L. Tonga, Professor Jade Alberto, Ma'am Glenda dela Torre, you are all the backbones that helped me build a complete framework for this study.

To my Dada, Aries S. Perez and my parents, Rey Jonell C. Borre and Miguela C. Borre, thank you for your unconditional love and support.

God Almighty, You are the ultimate reason why I have come this far.

References

Jonassen, D. H., & Grabowski, B. L. (2012). Handbook of individual differences, learning, and instruction. Routledge.

Pacific Policy Research Center. (2010). 21st Century Skills for Students and Teachers. Retrieved from http://www.ksbe.edu/_assets/spi/pdfs/21_century_skills_full.pdf

Contact email: janinborre06@gmail.com