UTM

UNIVERSITI TEKNOLOGI MALAYSIA

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INUSTRIAL TALK 2 NEW ADADEMIC LEARNING INNOVATION SYMPOSIUM

http://ctl.utm.my/nali2018/

Introduction New Academic Learning Innovation (NALI)

New Academic Learning Innovation is brought by UTM Academic Leadership in collaboration with School Of Education, Faculty of Social Sciences & Humanities UTM and Asia Technological University Network (ATU - NET). Venue of NALI is Sultan Iskandar Hall, from 25th - 26th September 2018.The objective of NALI is to recognize and sharing NALI research and innovation product in teaching and learning via platform. Next, NALI talk series and workshops can improve educator competency in teaching and learning in the 21st Century. Educators in practicing NALI can be improved STEM awareness.

Executive Summary

Generally, the overview of the industrial talk 2 is giving the explanation on New Academic Learning Innovation. NALI had show that the new teaching and learning ways among educators and scholar. The new learning innovation is more effective than traditional teaching. There are increasing interest and understanding of scholar in learning. The example of NALI is conceptual diagram, organic magnetic board, and interest-infusion program with “Kelab Suka Belajar ”.

1.CONCEPTUAL DIAGRAM : AN INNOVATION APPROACH IN TEACHING NURSING CONCEPT

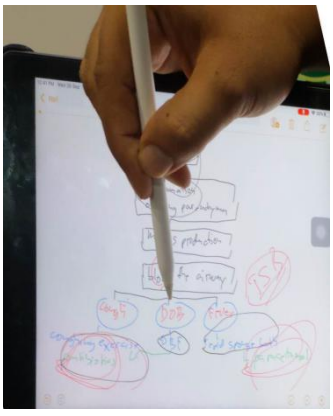
https://en.wikipedia.org/

Commission on Higher Education (CHED) has released its new policies, standards and guidelines, implement the shift from competency-based standards to outcomes-based education (OBE). The project objectives are using traditional lecture and conceptual diagram in terms of their retention and critical thinking skills to determine the pre -test and post-test scores of the participants. Hence, its can determine the significant differences between the conceptual diagram and traditional lecture method.

Novelty and Creativity

Conceptual diagram and audio-visual are used in the discussion of disease process after the students were tasked to study the assignment posted online. Moreover, the conceptual diagram uses systematic technique of presentation.





Sampling Procedure

https://en.wikipedia.org/wiki/File:Mindanao_State_University_-_Iligan_Institute_of_Technology.png

There were 30 students who came from State University within Marawi City, Philippines to participate in the conduct of the study significant different between using traditional lecture and conceptual diagram in the field of nursing students nursing students. The participants are equated according to their pre-test scores, gender, and distributed to control group (using traditional lecture) and experimental group (conceptual diagram).

Steps To Convert Traditional Lecture to Conceptual Diagram as Strategy

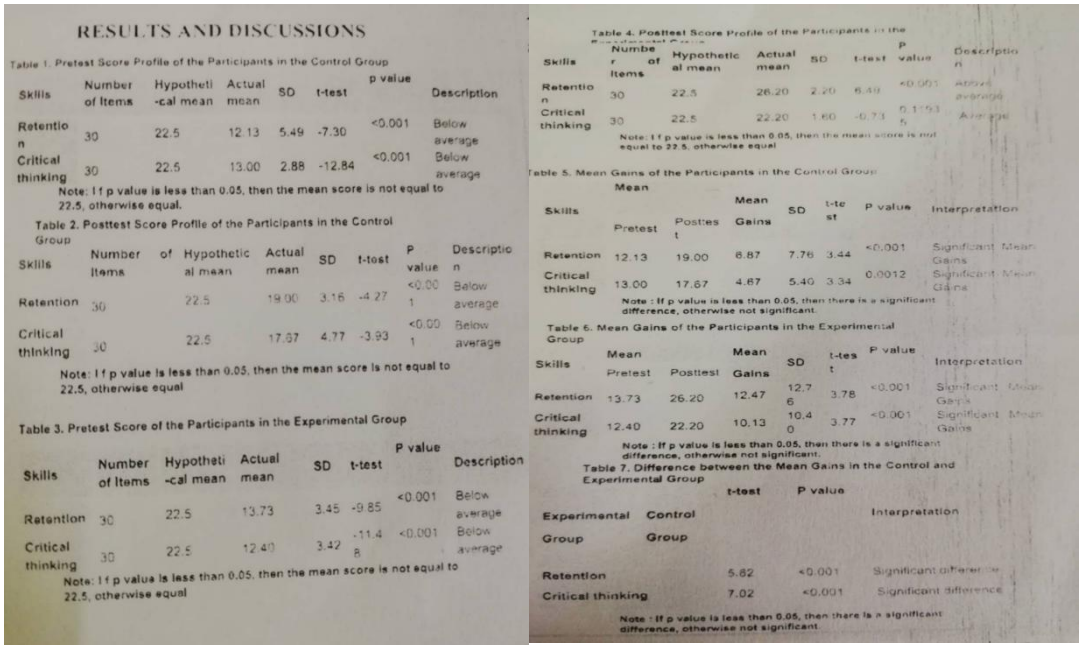
Provide a general information about the concept that includes common terminologies, assessment parameters, and laboratory procedures.

Posting assignment online to study the anatomy and physiology and the specific diseases to be discussed the following meeting.

The anatomy and physiology should be discuss with integration of signs and nursing intervention. It can done through the diagram, picture, and audio-visual presentation.

Use a map to discuss the disease or disorder where nursing diagnoses and invention were also integrated. Then discussion about medical managements and prognosis.

Result and Discussion



RESULTS AND DISCUSSIONS

Table 1. Pretest Score Profile of the Participants in the Control Group

Skills	Number of Items	Hypothetical mean	Actual mean	SD	t-test	p value	Description
Retention	30	22.5	12.13	5.49	-7.30	<0.001	Below average
Critical thinking	30	22.5	13.00	2.88	-12.84	<0.001	Below average

Note: If p value is less than 0.05, then the mean score is not equal to 22.5, otherwise equal.

Table 2. Posttest Score Profile of the Participants in the Control Group

Skills	Number of Items	Hypothetical mean	Actual mean	SD	t-test	P value	Description
Retention	30	22.5	19.00	3.16	-4.27	<0.001	Below average
Critical thinking	30	22.5	17.67	4.77	-3.93	<0.001	Below average

Note: If p value is less than 0.05, then the mean score is not equal to 22.5, otherwise equal

Table 3. Pretest Score of the Participants in the Experimental Group

Skills	Number of Items	Hypothetical mean	Actual mean	SD	t-test	P value	Description
Retention	30	22.5	13.73	3.45	-9.85	<0.001	Below average
Critical thinking	30	22.5	12.40	3.42	-11.48	<0.001	Below average

Note: If p value is less than 0.05, then the mean score is not equal to 22.5, otherwise equal

Table 4. Posttest Score Profile of the Participants in the

Skills	Number of Items	Hypothetical mean	Actual mean	SD	t-test	P value	Description
Retention	30	22.5	26.20	2.20	6.49	<0.001	Above average
Critical thinking	30	22.5	22.20	1.60	-0.73	0.1193	Average

Note: If p value is less than 0.05, then the mean score is not equal to 22.5, otherwise equal

Table 5. Mean Gains of the Participants in the Control Group

Skills	Mean Pretest	Mean Posttest	Mean Gains	SD	t-test	P value	Interpretation
Retention	12.13	19.00	6.87	7.76	3.44	<0.001	Significant Mean Gains
Critical thinking	13.00	17.67	4.67	5.40	3.34	0.0012	Significant Mean Gains

Note : If p value is less than 0.05, then there is a significant difference, otherwise not significant.

Table 6. Mean Gains of the Participants in the Experimental Group

Skills	Mean Pretest	Mean Posttest	Mean Gains	SD	t-test	P value	Interpretation
Retention	13.73	26.20	12.47	12.76	3.78	<0.001	Significant Mean Gains
Critical thinking	12.40	22.20	10.13	10.40	3.77	<0.001	Significant Mean Gains

Note : If p value is less than 0.05, then there is a significant difference, otherwise not significant.

Table 7. Difference between the Mean Gains in the Control and Experimental Group

Experimental Group	Control Group	t-test	P value	Interpretation
Retention		5.82	<0.001	Significant difference
Critical thinking		7.02	<0.001	Significant difference

Note : If p value is less than 0.05, then there is a significant difference, otherwise not significant.

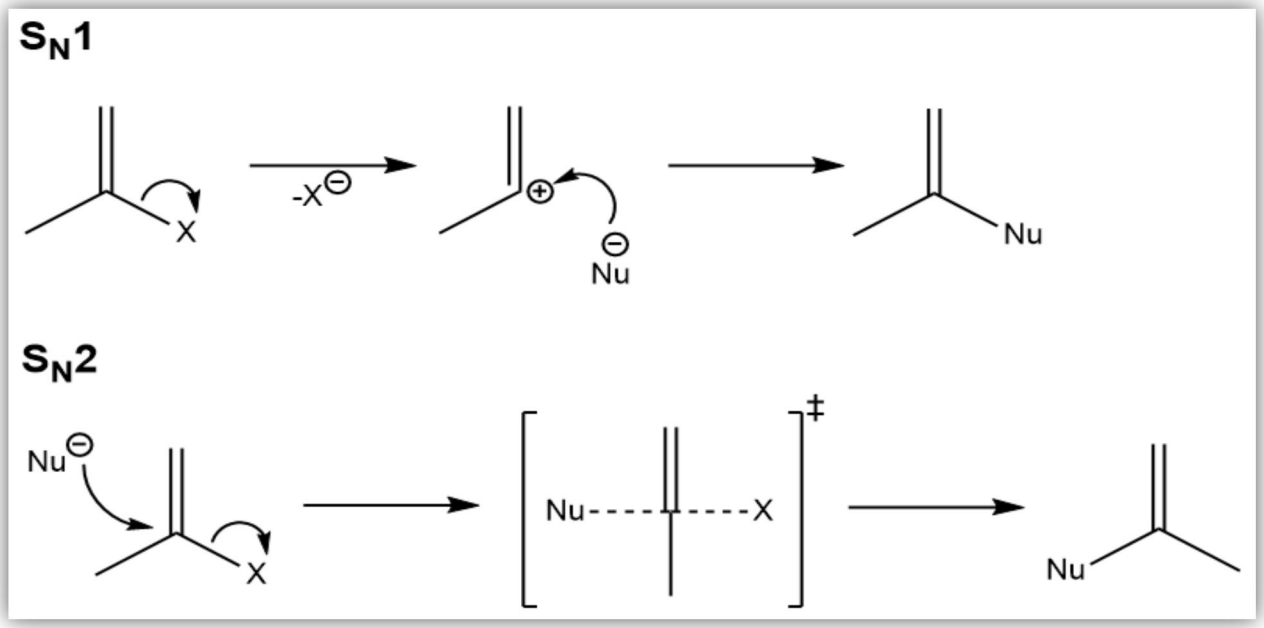
The table shows that the student have using 2 strategy that is traditional lecture and conceptual diagram. It can be a very useful method of instruction ,if the lecture is well organized and delivered effectively. The mapping also helps the students integrate the interrelatedness of new information through the critical thinking. Therefore, the result shows that experiment group is more improvement in the retention and critical thinking skills of nursing students using the conceptual diagram.

2.Organic Magnetic Board As Tool in Learning Organic Chemistry

Johor engineering matriculation college's lecturer have came up with an attractive learning material which is Organic Magnetic Board (OMB!). OMB is a tool in learning organic chemistry which is student showed a very bad performance and passive behaviour in learning it's reaction mechanism. Writing the reaction mechanism is a little bit confusing part in organic chemistry and it is easy to lose the marks. Thus, lecturer introduce the OMB to the students to help them in writing the reaction mechanisms. Student slowly improved in writing the reaction mechanism as they had an opportunity to utilize in writing it.

At first, this innovation was created from the lecturer when teaching the Sn2 mechanism reaction of haloalkane compound using circle magnet.

Sn2 reaction mechanism



Credit to:https://chemistry.stackexchange.com/questions/14482/why-do-sn1-and-sn2-reaction-not-occur-at-sp2-centres

Circle magnet

Credit to:https://dir.indiamart.com/impcat/round-magnet.html

Then,the OMB improved with small magnetic board, colourful magnet without labelling and toothpick with plasticine to represent the bond. Lastly, it is further improved with a large magnetic board, colourful magnet with labelling to make student know the particle or atom and 3D printing application to represent the bond. OMB did not just for organic reaction mechanism, it also can be use for other learning like atomic model, balancing chemical equation via inspection method, formation of ions (cation&anion), chemical bonding and structural formula of organic molecules.

3.STEAM INTEREST-INFUSION PROGRAM WITH KELAB SUKA BELAJAR BY SCHOOL OF EDUCATION, UTM

There are also Steam interest-infusion program with Kelab Suka Belajar by school of education, Universiti Teknologi Malaysia (UTM). This program was invented to appraise the point of view of students towards the Kelab Suka Belajar programme.

Other than that, this program is to increase the interest and attitude of students towards STEM subject in school. Next, this program should be able to make the students feel excited and plant the interest in them towards STEM field. Lastly, it is the objective of this programme to strengthen their relationship with the community of UTM students.

Among the technologies used to apply STEM interest among students are arduino, augmented reality and virtual reality, mobile application, video based learning and simulation. And among the awards received by the STEM program are the CCIN 3 star rating, Grant from the Kota Bahru Kota Bahru foundation of RM 10,000 and grant TIER 1UTM. The impact of this program on students are that they will be more prompt to learn and they are more fascinated in choosing a career related to STEM and their future will be guaranteed.

STEAM (Science, Technology, Engineering, Arts and Mathematics) interest-infusion programme is a programme that has been created to instill the students' interest in science, technology, engineering, art and mathematics. This program is very important to produce students and graduates who are serious about the future of the country. The STEM field in malaysia is very wide and this area has a major impact on the current and future Malaysia economy. Malaysia needs to produce more high quality individuals in the field of STEM in order to provide a clear opportunity for the nation and the self to advance in line with the 2020 vision.

In conclusion, STEAM can help me to think further and think innovatively in line with technological advances in the 21st century. I would think logically about a study and not just focused towards one direction only. With STEAM, I will be a creative and dedicated minded student. STEAM is a new innovation that will take place which is a major milestone for our education system today.

Reflection

Nowadays, technologies are developing in many way, so to make sure students show their interest in learning, many innovation have produced. First of all,the conceptual diagram help the students study and improve critical thinking skills. Human remember easily by looking at the visual, this really help in teaching nursing concept. Next, the organic magnetic board was created to help student visualize how the reaction mechanism occur. This innovation improve student's ability in writing the reaction mechanism. Both of this innovation had been tested on a group of student. The result of post-test improved drastically from the pre-test. It shows that learning through diagram really help the student to understand. Lastly, interest-infusion program with "Kelab Suka Belajar " have increase student interest in learning science, technology, engineering, arts and mathematics (steam). Beside that, they have create member's card "Kelab Suka Belajar " for attracting students to learn and think creatively and encourage them to use the library.