World Journal of Educational Research
ISSN 2375-9771 (Print) ISSN 2333-5998 (Online)
Vol. 10, No. 1, 2023
www.scholink.org/ojs/index.php/wjer

Original Paper

Adapting Kwl Strategy for Teaching Science Practicals to Children with Special Needs for Effectives Learning

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Received: December 26, 2022 Accepted: January 27, 2023 Online Published: February 1, 2023

doi:10.22158/wjer.v10n1p66 URL: http://dx.doi.org/10.22158/wjer.v10n1p66

Abstract

The learning of science is imperative for development in every society, and so it should not be limited to some persons. Therefore, these study sets out to use KWL strategy to adapt science teaching to the children with special needs for effective learning.

The research design used in this study was the quazi experimental design specifically the pretest-posttest method. Three research questions guided the study. The sample of the study was made up of eight junior secondary one students from one public school in Lamingo, Jos plateau Nigeria. Intact class was used because there was no randomization. Base line data was collected from the class teacher on the students previous performance on the topic Classification of food. The researcher later taught same topic using KWL strategy for three weeks after which a test is given to collect data in form of scores. The data was analysed using percentage.

The findings showed that KWL engaged students in the topic taught and also activated prior knowledge. KWL also enhanced good performance, thinking skill and promote curiosity.

The researchers recommended that: teachers should ensure that appropriate activities be planned to take care of student needs; Government to ensure that all children have an equal right to education of any type.

Keywords

kwl, adapting, strategy, science, practical, children, special needs, effective learning

1. Introduction

Over the years, Nigeria as a nation has undergone several environmental changes brought about by number of worldwide revolution, science and technology, economic, political affairs and social structures but our education system has not adjusted to the rapid changes although it has grown and changed more rapidly.

Education is that aggregate of ideas, methods and personnel designed and deployed by society to teach its members how to get through life by doing or pursuing and realizing set goals. It is a social force that can be compared to the rays of sun or to the showers of rain which different plants and trees harness and use according its own nature.

Education if properly conceived and executed should equip the whole man to go through life achieving not only those goals that society approves but also those goals that will make the individual realize himself and God. Education that is properly executed should bring positive changes, induce knowledge and understanding, help the learner to develop the inbuilt powers nature endows the human body: mind and intellect.

The world understand very clearly that without proper education for the citizens of any country, development will continue to limp on one leg (Enukoha, 2004). it is on realization that the collapse of education n system that led to the world conference on Education for ALL (EFA) in Jomtein, Thailand in 1990. This was adopted by all countries and pledges to ensure education for all citizens. This therefore suggests that plans for children with special needs are necessary.

Special needs education is the one that educates student in a way that accommodates their individual differences, disabilities and special needs. It is designed to help individuals with special needs to achieve a high level of personal self-sufficiency. Special needs education provides education for learning disabilities, communication disorders, emotional and behaviour disorder and intellectual disabilities, etc.

This paper chose to teach learner who have learning disability. These are group of children who tend to learn slower and are in most cases unable to retain what they learned. They have short attention span.

Learning in this group of people does not happen incidentally but are directly taught. Most often, they cannot link one learning to another unless specifically told.

A child is referred to as slower learner when his/her thinking skills develop at a notably slower rate than that of his/her peers and below average intelligence .

Let us take a little time to list out their characteristics:

(1) They are unable to apply certain learning or concept in different situations without help
(2) They are underachievers
(3) Socially, they are immature and unstable in behaviour
(4) Can be aggressive about petty issues
(5) Are self-conscious, day dream, love to spend time in solitary
(6) They are antisocial

(7) They have difficulties in identifying sounds, and also give irrelevant answers to questions

(8) Slow learners have it difficult to or hard to write from dictation or oral presentation

(9) Cannot differentiate between objects and sizes

(10) They find it hard to express themselves verbally

(11) Have poor handwriting and learn in Parts not whole Edward (2020) gave list of how to attend to such children:

(a) Give them quiet study time table, avoid distractions

(b) Ask questions like "what do you make of this?" can you tell me how this is different from this ?, help by guiding them.

(c) Give small tasks because of short attention span

(d) Do not label them, do not keep reminding them of being slow learners, praise them.

Be patient and supportive with them. Every child is special and has talent of his own, more often than not; they are more creative and artistic/performing arts, what is the concept of KWL

A KWL is an acronym for "what you know, what you want to know and what you learned. It is an easy strategy to apply and lead to remarkable improvement in students' performance (ASC, 2002) and to retain same. It can be organized in a chart. It is a simple graphic organizer that empowers students to own their learning and helps teachers curate the most engaging lessons. KWL charts starts students thinking about what they know about the topic, what they want to know and what they have learned in the end. E.g. U lesson education App; it raises their curiosity, teach the lesson to the interest of student to show evidence of learning, help them to connect in lesson, introduce lesson first, evaluate both amount of knowledge and assist them.

They are active participant in their learning. It is organized to engage, guide and review learning, it also help students to reflect, on prior knowledge, recall understand the learning objective (what to learn and active prior learning/knowledge to complete chart.

This suggests real learning and long term retention come when students engage with information. Some of the benefits of KWL strategy charts are:

(a) Motivate and engage students in learning process

(b) Track progress and learning outcome

(c) Present a simple method for organizing note taking

(d) Offer flexibility and be adapted to lesson.

(e) Keeps teachers and students on the same page.

(f) Give all students printed copy

(g) Write the page on the board, lets study

(h) Write it down, reader

(i) Write it on the board

(j) Teacher asks them "what do you want to know?"

Science practical is that science arranged for further investigation in details as a guide to the practice of

an art. Practical science is necessary because science is not learned until it is felt i.e. seeing is believing and helps students to remember more.

2. Statement of the Problem

Education for all suggests that children with special needs should be taken care of in a way that accommodates their disabilities. But in most public primary and junior secondary schools where there is inclusive education, all children are treated the same. This practice does not allow the special needs children to learn at their pace.

Slow learners according to Ogle (2002) have short attention span, cannot retain what they learned and most often, cannot link one knowledge to another. This is a problem to their effective performance if mainstreamed without proper care.

Edward (2020) opines that KWL could help oral presentation, socialization, retention of learned materials and relating previous knowledge to another situation.

Consequently, this study is under taken to see how KWL can help slow learners learn science best.

3. Purpose of the Study

The purpose of this study is to adapt KWL teaching strategy to children with special needs in science learning. The objectives of the study are to:

(1) Determine the impact of KWL in science teaching to special needs student

(2) Observe how the special needs students apply previous knowledge to the new learning

4. Research Questions

(1) What is the impact of KWL on slow learner's performance in science

(2) To what extend are slow learners able to classify foods provided?

(3) Are slow learners able to link previous knowledge to present learning?

5. Methods

This study used the quazi experimental design specially pretest, posttest method. The students in a public Junior secondary school one from Lamingo were used for three weeks. The students were both boys and girls the same class. There was no randomization

Step 1: In carrying out the procedure, the researchers visited the school, after taking permission from the school, with the help of the class teachers, identified 8 students who were slow learners and also established their performance on topic "classification of food". The population of the study was 8 and these eight students were all used in this study

In administration of the study, the researchers collected past scores of these students on the topic, food classification from the class subject teacher. After which the KWL strategy was administered as the intervention in the study. Here, KWL chart containing 3 cards per each student requesting them to fill

what they know about the topic, what they want to know about the topic and what they learned after the lesson were distributed to the students before the lesson began. Percentage was used to analyse the data collected.

Table 1. KWL Charts for Students

Know	What I want to know	Learned
- I know that there are different types of food	- I want to know the different classes of food	- I learned that there are six classes of food
- I know that food gives energy	- I want to know the functions of each to the body	- I learned that food gives energy but in different quantity
- I know that food dropped on the ground is not good for eating	- I know to know what is balanced diet	- I learned that having the right quantity of each food type in a meal, constitute a balanced diet
- I know some food are sweet, sour	- What happens when they don't have enough of each food time?	- I learned that not having the right quantity of the food types in the body constitute deficiency or malnutrition.

Step 2: Teachers carries out instructions based on the lesson questions asked by the teacher and then what the students wants to know.

The lesson questions are:

1. What is food
2. What do you know about food items provided
3. What would want to know about them
4. List 3 things you learned about the food classes
5. What is the importance of this lesson to you

Each of these questions carries 20 marks each, totalling 100% collectively.

The marking scheme was provided to guide the scoring

6. Results

1) It was discovered that the KWL strategy engaged students in the new topic, activate prior knowledge, monitors and reviews students learning it

2) It helped students to remember materials learned

3) It enhances the performance of slow learners, that is, previous average score was 30%, while the score obtained after intervention was 60-90%. This is in line with the findings of Edward (2020)

4) KWL also helped students thinking skill promote curiosity of slow learners in science. This is in line with the findings of Canon and Atilla (2015)

5) KWL strategy also enabled students to differentiate between the classes of food and could discuss what they learned orally. This is in tandem with the submission of Ogle (2022)

6) It is a demanding strategy on the part of the teacher, and demand patience.

7. Conclusion

The study confirms that KWL strategy has positive effect on slow learners understanding of science concepts and addresses all the characteristics of slow learners.

Implication

The aim of an inclusive education environment is to ensure that all students are treated fairly and get equal opportunities. Within an inclusive education environment, student diversity and uniqueness should be celebrated without discrimination. Sadly, there are still instances of children being treated differently based on their unique qualities. No students should be ostracised or segregated based on their differences or learning capabilities.

For our country to meet her educational standard all children whether slow learners' average and fast learners, all children with special need should be taught based on their ability. This will go a long way to allows for all students to improve their ability to communicate with one another. With an integrated classroom, students are able to interact with a wider range of students with a variety of abilities. This will open up opportunities for them to strengthen their communication skills and adapt to a varied level of social interactions.

Additionally, slow learners will be prepare them for the after school world and make the students career-ready. Once students have entered the workforce, they will be working alongside diverse communities with a range of abilities.

8. Suggestions

1. Government should ensure that all students have an equal right to education
2. Teachers should ensure that the classrooms should be made up of students with mixed abilities
3. Administrators should ensure that slow learners should be separated from main groups based on discrimination
4. Appropriate activities should be planned and each student's personal needs taken into consideration
5. Support should be provided to all students to assist and allow them to reach their full potential

References

Blachowicz, C., & Ogle, D. (2008). *Reading comprehension: Strategies for independent learners*. New York: Guilford Press.

Canon, S. O., & Atilla, C. (2015). *Science education for students' with intellectual disability*.

Edward, C. (2020). *Slow learners characteristics and tips to improve*. https://www.hopscotchK-W-L Know, Want to Know, Learn. (2014). In *National Education Association*. Retrieved October 19, 2022, from http://www.nea.org/tools/k-w-l-know-want-to-know-learned.html

K-W-L (Know, Want to Know, Learn). (2014). In *National Education Association*. Retrieved October 19, 2022, from http://www.nea.org/tools/k-w-l-know-want-to-know-learned.html

Logsman, A. (2021). *KWL strategy improves reading ski*. Retrieved from https://www.verywellfamily.com/kwl-what-is-kwl

Lucid, C. (n.d.). *Harnessing the power KWL charts in education*. Retrieved from https://www.lucidchart.com/blog

Nugroho, I. A. (2022). How to make slow learners learn science. *Journal of Physics conference series*, (3), 1321. https://doi.org/10.1088/1742-6596/1321/3/032092

Pujaningsin, F., Rochmat, W., & Nurdayati, P. (2021). *Barriers to teaching Science to Special needs: Exploration from learners perspectives*. https://doi.org/10.18502/kss.v6i2.10014

Randy, J., & Timis, M.C. (2013). Science for learners' with special needs Retrieved from https//www.researchgatenet.

Weebly. (2020). Retrieved from https://teachreadingstrategies.weebly.com