

**COMPUTER ASSISTED LEARNING ON
DIGESTIVE AND RESPIRATORY SYSTEM
FOR THE DEAF**

A CASE STUDY OF GINDRI SPECIAL SCHOOL FOR THE BLIND

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CERTIFICATION

This is to certify that this project work was carried out by Chinyere J. Igwegbe, and it met the requirement for the award of a Post Graduate Diploma in Computer Science of Federal University of Technology, Minna, Niger State.

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DEDICATION

This work is dedicated to Almighty God who supplied all the wisdom that was needed for this work to be a success, may all the glory honour and adoration be attributed to his holy name.

Also,

This work is dedicated to my loving, and caring husband MR Benibo George.

ABSTRACT

The purpose of this study is to find out if computer can help to alleviate the educational problems of deaf student studying sciences in a normal school. These students are faced with the handicapping condition of communication gap between them and their non professional teachers in a teaching learning environment or in a normal school. These students are faced with the handicapping condition of communication gap between them and their no-professional teachers in a teaching earning environment or in a normal school. And so computer tutorial was used to bridge the gap.

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CHAPTER ONE

1.1 BACKGROUND OF THE STUDIES

Education has been seen by the Federal government as a way or as an instrument for achieving some national goals. According to the Federal government the five national goals that can be achieved using education are

- a free and democratic society
- united, strong and self reliant nation
- a just and egalitarian society
- a great and dynamic economy
- a land of bright and full opportunities.

(National Policy on education 1981) N.P.E 81.

To enable the government achieve the above objectives everybody who can benefit from education has to be educated so the handicapped e.g. the "deaf" should not be left behind in order to allow every hand to help or participate in up lifting Nigerian education emphasizes the integration of individual into a sound and effective citizen and equal educational opportunities for all citizens of the nation at primary, secondary and tertiary educational levels both inside and outside the formal school system.

To pursue this aim, government introduced the universal primary education in 1981 to make sure everybody benefits from education, unfortunately not all Nigerian school aged children have access to school because of various kinds of impairment. Hence, the federal government said she will practicalise equality of education using good special education as context "special education" is the education of children and adult who have learning difficulties because of different types of handicaps such as blindness, mental retardation deafness e.t.c and as a result are unable to cope with the national school class organisation and method.

THE OBJECTIVE OF THE STUDY:- The objective of this study are

- i. To give concrete meaning to the aim of equalising educational opportunities for all children, the physical, mental, emotional disabilities not withstanding.
- ii. To provide adequate education for all handicapped children and adult especially the deaf in order that they may fully play their roles in the development of nation
- iii. To provide opportunities for everybody to make use of the machine computer

Handicapped children have a right and need to learn science content and skills (evidence presented by the conference of the National Science Teacher Association, Washington D.C. Indicated that handicapped students have similar needs to those of their non-handicapped peers). (Science education of the physically handicapped 1979) therefore, it is necessary that equal educational opportunities be offered to handicapped students in the area of computer to see if it can help them study science courses which is an integral part of the education of all handicapped students. They should receive the same comprehensive exposure to the various fields of science as to non handicapped students. Science teachers should utilise multi-sensory instructional techniques and laboratory centred programmes for effective teaching of the deaf handicapped students.

The goal of the nation as it was stated in the New National Policy on education, which I have, spelt out in page 1 is oriented toward scientific and technological progress. Hence it is not only important to encourage the science education of all handicapped children, the deaf handicapped children in particular should be provided with suitable resources like computers and learning environment to help them contribute toward the achievement to these praise worthy natural objective.

1.2 THE PROBLEM OF THE STUDY

The problems of hearing handicapped in the science class is based on the fact that much of our science teaching is highly practical or experimental oriented and this needed a Lots of

verbal explanation from the teacher, and since this children can not hear, it then becomes a problem to their science learning.

Science involves collecting information about our physical world through the use of our senses (Science education, 1979). However, the hearing handicapped children can not use his/her sense of hearing to study. Hence learning science meaningfully becomes a problem of the visually handicapped children. The question is happen this problems be solved so that these children will benefit fully just like their hearing peers from science education.

The problems facing the visually handicapped children is also based on the fact that science is a subject that is learned using the sense of sight testing, hearing feeling sight. Therefore the problem of the science education of the hearing handicapped to not lie in developing a separate curriculum for them but it rests squarely on adopting a materials and resources that are constant with their functional sense of touch, test and sight. Hence tactile and manipulative aids multi-sensory science activities, picture books computer assisted learning should be used to facilitate the learning of the hearing handicapped children and solve much of the instructional problems he/she faces.

Hence, the problems of the study can be summarised as follows

1. Analysis of secondary school curriculum must especially the aspect of digestive and respiratory and system to identify the best way computer can be used to teach it to the students.
2. Development of lesson based on the respiratory and digestive system suitable for teaching hearing handicapped children in secondary school.
3. Determine the effect of computer assisted learning on the science learning of the hearing handicapped students.
4. Analysis of results and comparison of achievement Data.
5. The identification, analysis, calculation synthesis of related literature on the research topic.

6. Development, validation and administration of class room test based on the respiratory and digestive system.
7. Choosing of computer language and developing of computer programme that can be runed by the computer when inputted in the computer.

1.3 RESEARCH QUESTION

- 1 What are the trend of achievement of the experimental and control group on the JSS III science achievement.
- 2 Are the achievement of the experimental and control group significantly different on the pre test.
- 3 Is there any significant difference between the science achievement of hearing handicapped student who where taught with computer aided learning and those where not taught with computer aided learning.
- 4 Does the use of computer aided learning have an effect on the science achievement of secondary school children.

1.4 HYPOTHESIS

- 1 The use of computer aided learning will not have a significant effect on the science achievement of the hearing handicapped secondary school student.
- 2 Boys and Girls in secondary school taught with the computer aided learning will not differ significantly in their science achievement.
- 3 Secondary school students of different age group taught with the computer aided learning will not differ significantly in their science achievement.
- 4 There will be no significant difference between the pre test score of both the experimental and control group.

1.5 RATIONALE FOR STUDY

As earlier stated, the problem facing the hearing handicapped is not related to curriculum as an appropriate curriculum is available in the school. However, the important problem facing the hearing handicapped in science is that of adapting available research for effective teaching and learning e.g. computer. Hence this study is designed to determine the effectiveness of computed assisted learning based on the learning primary school science.

1.6 SIGNIFICANCE OF THE STUDY.

The study is important in the sense that it will help the secondary science teachers in selection of those material and methods for promoting learning of science in the secondary school.

This study will also help handicapped student teachers to know that computer is not only for normal student, the handicapped ones can also benefit from computer.

In addition, the National policy on education (1981) prescribed that visually handicapped children should be mainstreamed with normal children for teaching purpose in the regular classroom. This mainstreaming poses a challenge to the regular secondary school science touches. This is because the resources for teaching science effectively the blind may vary from these required for the effective teaching of science to normal children. Hence, it is very important to improvise and adapt resources like the computer to meet the peculiar need of the hearing handicapped children in secondary science classroom.

In other to promote effective teaching, it is not enough to use computer aided learning in teaching the deaf children, it is equally important to evaluate the effectiveness of these resources in other to determine the difference they make . Hence the evaluation will appropriately guide secondary school science teachers in the selection and use of computer for teaching and learning in the classroom.

1.7 SCOPE AND DELIMITATION.

Geographical location of the study :- most of what is geographically known today as plateau state was from many parts of former Bauchi province. In 1967 Benue plateau state was created. It has nine administrative divisions in 1976; plateau state covers nearly 53,505 square kilometre . It has a projected population of 395 million. It derives its name from the dominant geographical landscape of the area of plateau. The plateau high lands stands on average height of 12,000 metre above sea level peak like the famous Share hills rising over 5000 metres above sea-level The state is located in the middle belt zone of the country, it lies between 7°C and 11°C east .

Plateau state shares common boundary with six states of the federation and the federal capital territory. The states has a mean temperature of between 18.7°F and 51.7 generally, temperature in the plateau is several degrees lower than other parts of the country. The state has a total of local government area.

Mangu happens to be one of the local government of Plateau state, Gindiri where this research work took place is found in Mangu L.G.A

Gindiri is located north east of Mangu town having some cold climate of the state. The people of Gindiri are predominantly farmers, they are highest producers of Irish potatoes in the state. They embrace more of Hausa culture than their real culture. In the of manage, they have a cultural festival which they normal celebrate every 1st January. (pyamday)

The school Gindiri centre for the handicapped where this research work was carried out is located in Pyam chiefdom. The school is established in 1953 by Sudan United Mission (SUM) it started with the population of six students. The number of staff where not recorded. The aim of the school was to train handicapped students of different types. The proprietorship of the school has changed from (SUM) to COCIN Church with an increasing population of 506 students with about 60 teaching staff and having a total of 35 classrooms and 6 dormitories for students leaving in the school.

INPUT DEVICE:- This is the channel through which you put in information into the computer, keyboard, punch card e.t.c

OUTPUT DEVICE:- This is the channel which the computer gives you the feed back of the information you put in through the input device, it is called screen.

CHAPTER TWO

LITERATURE REVIEW

2.1 GOVERNMENT POLICY ON EDUCATION OF THE HANDICAPPED

According to National policy on education (revised edition 1981) section 8, the government saw special education as education of children and adults who have learning difficulties because of different sorts of handicaps:- blindness, partially sightedness deafness heardness of hearing, mental retardation social maladjustment physical handicaps etc. due circumstance of birth inheritance, social position, mental and physical health pattern or accident in latter life as a result, a few children and adult are unable to cope with the normal school class organisation and method.

According to the government, the purpose and objective of special education should be:-

To provide concrete meaning to the idea of equalising educational opportunities for all children, they're physical, mental emotional disabilities not with standing.

The government can only achieve equal educational opportunity among the deaf children by putting in to taught the coping which is usually learn by sense of hearing & other four senses this means that government should sponsor the importation of computers for the deaf students in secondary and higher institution as teaching aids so that they can achieve like other.

To provide adequate education for handicapped children and adult in order that they may fully play their role in the development of the country. This means that the deaf are also expected to play his own role in the science development of the country and so effort has to be made so that the deaf can benefit fully in a science class just like the sighted and thus computer added learning.

One of the important strategies government has adopted to make science education accessible to the blind is mainstreaming. Mainstreaming poses a lot of problem to class teacher meeting the special needs of handicapped children in the regular science classroom.

Secondly mainstreaming challenges the regular teacher to locate and adapt instructional materials suitable for teaching science to the deaf handicapped. Hence to make mainstreaming work in the regular science classroom teaching material such computer has to be adopted to the instructional needs of deaf children.

2.2 THE ROLE OF COMPUTER IN EDUCATION

Computer has important roles to play in different section of educational set up. Apart from student learning computer as their course in the school large educational set up like the university or other higher institution need the aid of computer in various department or sections of the university to easy and to make the war more efficient. Such sections may include

Human resources department

Account department

Examination department

Administrative department

Finance department

HUMAN RESOURCES DEPARTMENT:- In this department the number of student admitted each year in the institution and in various department of the institution should be computerised. Also the number of graduate passing out every year should also be computerised so that after a long period the institution will be able to know how many graduates has passed through that institution, not only that, this can provide data for other information e.g. lost of certificate etc. This department also needs to computerise the name and number of all the staff both senior and junior and their year of employment so that to get information about a staff will not be difficult.

ACCOUNT DEPARTMENT

This department handles money and so should be highly computerised the expenditure of the institution, the salaries of workers the income of the institution this are all confidential matters

and should be kept in the computer for the consumption of only those who are directly involved.

EXAMINATION DEPARTMENT

In this department, the computer is needed not all to type and print the exam papers but also to make of possible record the scores, find the average store and print out the manes converted to percent if needed for the consumption of the students and the teachers and the school at large.

ADMINISTRATIVE DEPARTMENT

This department handles all the administrative worker of the institution, aid we know that if there is administrative problem this will affect the inter system so they needed to use computer to store information and to prefer some essential duties for more accurate output.

FINANCE DEPARTMENT

This department handles the merely aspect of the institution and fraud is usual found in this department knowingly or unknowingly. The use of computer to handle every money matter makes it more effective secured and mere confidential.

2.3 EDUCATION OF THE HEARING HANDICAPPED

According to Anumange in Among (1986) the great concern on the education of the hearing handicapped children in Nigeria has been generated by two major factors:

- a. The right to education
- b. The observation that a disabled child through special education would learn to look after himself as far as his disabilities allows, and no longer depending entirely on others for support of survival. Based on this law Enfeld (1952) said that education of the deaf should aim at giving the blind knowledge of the realities and the feeling that he is regarded and accepted as an individual in his right.

The education of the deaf handicapped children can be through:

- a. Integration of the deaf handicapped children into a regular school- (integration programme)
- b. Educating the deaf handicapped children in a special school.

INTEGRATION PROGRAMMES:- The term integration refers to the process by which a deaf child becomes part of the regular classroom or school integration requires the joint effort of both special and regular teacher education of the hearing handicapped children together with hearing children. Out a good number of visually handicapped children has graduated from regular school in the rural area in the past, this type of informal integration has been in existence before the building of schools for special education. Up till now it is still being practice in many parts of the country such as Anambra State.

Annmoye 1982 said that the main reason for viewing integration as a new process in Nigerian education educational system now is that careful planned programmes are being prepared for it. This process will accelerate the number of the hearing handicapped children who will be admitted in to regular schools, there are various types of integration services that can be provided for the hearing with only observation and consultation from special education personnel

- Placement in regular classroom with observation and consultation from special education as well as the provision of special education materials.
- Placement in regular class with itinerant services resources teacher and special materials.
- Special class unit in a regular school staffed by special educationist, as well as the provision of special education materials.
- Placement in regular classes with itinerant services
- Placement in regular classes with the aid of a resource teacher and special materials.
- Special class unit in a regular school staffed by special education.

Some special need of the hearing handicapped children must be provided for before meaningful integration into regular school can be cleaned to have taken place. This programme create an awareness of the capabilities of the visually handicapped children. This awareness will add to the improvement of regular teacher's method. As the integration programme flourishes the co-operation between it and the special school programme will assist in the training of teacher and developing of specialised materials. It will aid the improvement of the society's feeling towards the handicapped person. Integration above all, offers the visually handicapped children a broader and wide education then they derive from special school.

SPECIAL SCHOOL:-

There is a great need for special schools. This is because there are obviously hearing handicapped children with additional handicapped, they will be better served by special school programmes. If at residential school it self should give deaf children as many of the regular experiences of other age groups as possible segregation of every kind between sighted hearing and the deaf children, between boys and girls, should there for be kept at a minimum and all means of integrating the deaf pupils individually and group with community activities should be promoted and strengthen,

Berthod Lawanfeld in his book the exceptional child said that it is difficult to suggest in one brief writing the best method for meeting the educational needs of deaf children knowledge of the realities of the world we live in is given to the deaf children through the application of special method in the teaching such as computer the confidence to cope with these realities deals with emotional factors that needs specials consideration due to the child's deafness this deaf child needs special consideration whether the child is in the regular school or special school. These consideration may include:-

- Methodology of the education of the child.
- Emotional problems caused by blindness

- Specific social atmospheres which blindness created in the blind child and environment

SPECIAL METHOD OF EDUCATING THE BLIND

Adaptation to learning tools:- method of education of the deaf child are determined by the need of the deaf child obviously lack of learning necessitates certain adaptations in equipment and skills, particularly in the so called two subjects, some standard procedures, in this area are:- signer language and reading of print letters. In the study of science, demonstration and materials must appeal to the sense of sight, touch, smelling, and testing. The following five principles are essential parts of special methodology

- a- INDIVIDUALIZATION:- Modern education recognises that each child is an individual and provides for individual difference by various administrative and instructional means. A several deafness, the cause of blindness, the age of an set of the ear problem and any ear care required are same of the factors which must be considered in dealing with each child in addition to them the deaf child's home, environment plays an important role during his pre-school year and the teacher should consider it's influence, past and present an the child and his actions and reactions. It is for this and other reasons that classes for deaf children should be kept small six to eight pupils an the elementary level one up to bout twelve etc.
- b- CONCRETENESS: Deaf child react with all their remaining senses to the stimuli received from their environment but only through touch observation can they gain on actual knowledge of objects sounding them of their shape, size, weight hardness surface qualities pliability, and temperature. Hearing has it's greatest value as a medium of social contact, as source of descriptive information action and as a sense giving due to the presence, location or condition or condition objects an actual knowledge of the objects world and it's special characteristics only be gained through concrete factual observation, thus of course is not always possible and therefore models of objects are an important teaching aid.
- c- UNIFIED INSTUCTION:- The lack of hearing which serves as a unifying sense leaves the deaf child at a serious disadvantage in experiencing things and situations in their totality.

He gains many impressions by seeing, smelling, feeling of current and temperature changes and by touching objects or parts of them. These varied impressions need unification and structure in order to become meaningful experiences. The unit plan of instruction offers the best opportunity to practice this organisation of experience. It supplies deaf children information which hearing children can be assumed to gain in the natural course of their growth.

d- **ADDITIONAL STIMULATION:-** The teacher of the deaf children must provide them with opportunity for experiences which they can not gain in their own study. Excursions, field trips, museum visits, take the children to places where they gain actual knowledge of objects and situations, museum loans, classroom visits of interesting people, radio programmes bring desirable experience to the classroom preparation and follow up work are essential part of these activities. The most important element is increasing the deaf child's ability to get about and secure stimulation by himself. How to learn his way in familiar surroundings is a never ending task that begins with the deaf child's first steps. The necessary awareness of the environment and of change in it needs cultivation from early childhood and later during the school year deaf children should also learn about all other possible aids in getting about.

e- **SELF ACTIVITY:-** Deaf children can not learn by hearing with the teacher is teaching, he must learn by visual observation and this makes the child's learning slower and more difficult. Training and guidance must meet and encourage the development of his maturity functions desirable and compatible with a suddenly concerned time economy.

2.4 SCIENCE EDUCATION OF THE HEARING AND HANDICAPPED CHILDREN.

Children today live in world of science. The time in which they are now living is sometimes called computer age, the atom age or space age, it is a time which science is having

a tremendous effect on mankind, science contributed greatly to the betterment of man it has speeded communications made diseases of man it has speeded communication made diseases easier to control. In thousands of other way as well, science and technology has contributed to make the world a better place to live. Discoveries take place daily and life for the child to day is very different from that of any other post generation. If the hearing handicapped children are to understand our culture and the world in which they live in, they need to have a considerable appreciation and understanding of the wonders of science, today no education which exclude the study of science can be called liberal hearing handicapped children now, and later hearing handicapped adults will use innumerable scientific devices and work a jobs which depend directly or indirectly involving science. They will have to make many decisions involving science in such are as pollution control, conservation of environment, than planning, population of knowledge in science. There is more in a every aspect of science than are called learn in a time and amount of knowledge is doubling approximately it is there fore important that the visually handicapped children if it is taught correctly and with consideration of their intellectual level and age. They drive great pleasure and fun from the doing activities influence science can help the deaf children to observe critically to organise their ideas and to think logically, it can also contribute to an integrate with all other subject areas contributed to and most important, sciences, if it is taught well leads to what could be called a scientific attitude in the deaf child, the children tends to be curious and observant regarding his environment honest and objective, and wary for hasty judgement and sweeping statements. He can now weigh evidence with care and reaches conclusion.

This type of attitude is more important than factual knowledge and should be the main goal of science education of the visually handicapped. Better starting to teach the visually handicapped science, are must have thought out:

- a well defined aim
- a broad general aim

- an intermediate or process aim
- I. this means that we must take the trouble to think carefully about how and why we encourage the hearing handicapped children to do certain things and what we hope they will gain from doing them. They are advantages in defining aims before the event the most obvious being that we are more likely to achieve aim if we know exactly what it is clear aims also make evaluation easier.
- II. BROAD AIM:- When considering the aims of science teaching of the visually handicapped, in secondary school programme as a whole. What do we expect hearing handicapped to gain from their years in secondary school. The main goals are to enable children to acquire ideal skills responsibility understanding and leisure interest, which will enable them to be well-adjusted in their society. To achieve these important basic goals broad aims must be formulated and continually born in mind while teaching science importance of broad aims in science e teaching of the hearing handicapped are.
- To develop an independent and inquiring mind
 - To develop a scientific approach to problems
 - To stimulate the child's interest in himself and world about him
 - To promote an appreciation of life and thence need to can serve the world environment
 - To enlarge his knowledge and develop sound scientific concepts
 - To promote a sense of social responsibility are the experience and pleasure of working with others
- broad aims in science teaching of hearing handicapped are statements which make clear they why of science teaching of hearing handicapped child.
- III PROCESS OR INTERMEDIATE OBJECTIVE:- These are less general than the broad aim but not specific enough to be called specific aims. Good teaching does much more than able to the child's factual knowledge. It enables the child to develop attitudes, skills basic concepts and the ability to devise way of testing ideas and solving

problems. The teacher must be aware of this and structure the learning situation so that the child is hardly conscious of what he is gaining in these other ways.

Important process objectives in science teaching of the hearing handicapped are

- exploring, observing and during observations
- stating problems and selecting experiments or investigation to answer them.
- Suggesting and opposing hypothesis
- Interpreting findings and making inferences
- Acquiring manipulative skills
- Communicating
- Identifying patterns and relationships (classifying the process objective must be notified according to the stage of mental development reached by the visually handicapped children a concerned. It would for instance be useless to expect an in fact visually handicapped child to achieve much quantitative reasoning. Process objectives are concerned with the low of science teaching.

THE BASIC PROCESS SKILLS

The basic process skills are observation, making inference measuring, communicating predicting, classifying etc. This basic process skills to be learned in the first three of fair years of school.

I OBSERVING

This is the most basic of all inquiry skills when making observation, hearing handicapped children should be encouraged to use the senses of test, smell sight etc .

- observe quantitatively using measurement of number, size weight etc.
- Observe changes
- Be careful in distinguishing between observations and inferences
- Order observation over a given time.

II INFERRING:- When an observation has been made it should be followed by an interpretation process based on the child previous experience. The hearing handicapped child should be able to distinguish between observation and inference and should develop the following further understanding about inferences.

- That inferences may be interact
- The several inferences may be made from are observation
- If several observation gives rise to the same inferences confidence in the inference is increased.
- Inferences can be used to predict further observation which may support or refute them

III COMMUNICATION:- This is the ability to record and convey information in a concise and accurate way hearing handicapped children need to be trained to communication skills with exercises in description. The main communication skills with relevant in inquire method in science are.

- communication through graphs discussion
- a variety of written method in dividing recording of observations, Important taps in an experiment statements of results and research notes.
- Certain platural forms such as diagrams or sketches graphs to record information quantitatively and flow charts to show sequence of events hearing handicapped children should be encouraged to be used to choosing the clarity method of communication and also to be accurate in their recording.

IV MEASURING:- Measuring in fundamental part of scientific inquiry variable in experimental work often need to be measured and comparisons made of how changes in one affect the other measurement need to be make to determine areas volume temperature and force.

V PREDICTING:- Prediction is the expectation which one has that an event will occur based on previous observation. This is are of the major functions of scientific investigation.

We can predict with confidence that the seasons will arrive in sequence and the general type of weather that can be expected. Quantitative predictions can be made by using graphs. The shape of the graph gives a picture of certain trends. Interpolation (predicting beyond observed events) are based on estimating the shape of the graph at point between or beyond those actually plotted on it

VI CLASSIFYING:- This is the scribing of objects into groups according to their similarities and differences. Hearing handicapped children should be made aware of the arbitrary nature of any classification. Number of groups we may have as the basis on which the concerned with the coverings of animals we may classify them the coverings covered with feather etc. On the other hand if concerned with where they live we might classify them according to aquatic, terrestrial, aerial, and arboreal habitats. In science classification is used for a variety of purposes of most common are to show relationship between objects, and to simplify identification for example insects in one group, birds in one group. In order to classify effectively hearing handicapped children need to be able to observe and events to pick and difference and similarities.

2.5 TEACHING STRATEGIES

In formulating a teaching strategy for teaching the hearing handicapped science may things must be considered including the teacher's objective, the characteristics of the students, the activities or procedures, the teaching techniques and the materials to be used in constructing a lesson or series of lessons that skill of the teacher decides the way in which those different parts are assembled.

Some of this teaching strategy may include inquiry, discovery and problem solving. Children should learn by discovering new things by inquiring and experimenting in the classroom. They need to be encouraged to seek out and variable problems and then attempt to solve the problem solving ability does not occur spontaneously in children, it has to be taught,

learning to identify and solve real problems in a truly scientific way as equally if not more important, than the learning of the subject matter itself. Discovery teaching method offer the most promising approach to achieving both process and product objectives in science in the schools discovery teaching has some advantages over the next book or teacher centred science to which blind children are often subjected to since of these advantages lies in the fact that:-

- a. The child becomes personally involved in the task and this increases his motivation.
- b. The child is more likely to remember and understand the material under consideration.
- c. There is greater transfer because the child learns to use the process of science to find out other new things .
- d. The joy of discovery is an important incentive to a blind child.
- e. The child gains confidence that comes from their success of finding out for himself. In discovery, the usually handicapped child complies a learning task through using his own mental abilities to organise and utilise the assistance from the teacher. There are two main forms of discovery learning :

- i. pure discovering techniques:- involving to direction assistance other than encouragement by the teacher.

- ii. Guided discovery:- Techniques involves minimal moderate aid by the teacher pure discovery has certain disadvantages the time involved would be enormous and children may learn very little subject matter and also probability few of the processes of science guided discovery offers the happy medium between pure discovery and teacher countered techniques could discovery teaching has to be carefully structured by teacher and the amount and type of guidance is of great importance. Some of the essential instrucional characteristics of guided discovery teaching in science are:-

- Scientific processes are used by teachers and children
- Time is not important children should not be hurried or expected to meet two many deadlines this techniques may cause anxiety build up and stress with subsequent

decrease in performance why the teacher is tempted to tell an answer in order of save time he should remember that the process is more important than answer.

- And science hearing handicapped students cant make use of their sight, they may have to spend even more time then a sighted person will answer sought are not known in evidence to children text books. If used school be chosen because they ask question suggest ways of finding answers but to not give answers.

Questions such as

- problems are identified and clarified until it seems probable that they can be solved by the group it class.
- Children operate in small groups and as individuals as the occasion demands.
- Children are responsible for proposing was of gathering data from experiment observation cuttings, reading and other sources.
- Discussion groups comparatively evaluate assumption inference limitations and tentative conclusions. Then main objectives of guided discovery teaching is not merely to enable the child to understand the scientific basic of the modern world but enable him to write the language of science by taking part himself.

PRESENTING SCIENCE LESSON TO THE DEAF:-

Modern science teaching is based an practical experimentation children carry out experiments in the decisions in order to seek solutions to problems. They may want individually, in group, or as a class depending on the nature of the work at hand since they can not make use of their sense of hearing. Experimentation:- Experimentation in the classroom are real only if the child does not know the answers before hand. an experiment should be on exploration of the unknown and not a verification of something written in a text book. Experimentation is the purposeful variation of conditions, under strict controls. In order to discover the variations. The most effective experiment often are those which arise from pupils own questions instead of from a text book or from direct suggestion by the teachers. The

question posing demonstration can often be an effective opener for starting a series of practical science inquiries. The following can help experimenting to be an effective part of science learning:-

- experiment should be as simple as possible using or ordinary everyday equipment.
- One or most two variables should be considered in any particular experiment. More variable may lead to confusion, particularly with younger children.
- Let children do as much of the planning as they could. Changes are necessary the children should be responsible for them. There may be often hints or suggestions from the teachers.
- Control are an essential part of valued scientific experimentation. All variables except the one under consideration should be controlled.
- Experiment must be safe, inflammable or hot liquid poisons, main electricity and sharp edges should be omitted. Experiments involving such are demonstrated by the teachers.
- Deaf children should be encouraged to apply the information, which they have gained from their experiment to the world about them. The application to real life situations gives added meaning to their work in science.
- Measurement is one of the most important experimental tools for hearing handicapped children.

DEMONSTRATION:- This is a procedure in a situation which is shown in front of the class and is carried out by the teacher, by a child or by a group of children. Demonstrations are essential whenever manipulation has to be done that is beyond the ability of the children. Also if poisons, main electricity, inflammable materials, or sharp edges are being used demonstrations are visually advisable for safety's sake. Most of the time, individual practical work is highly preferable for experience, it is better than the teacher carrying out the demonstrations and only verbalising it for them to understand what she is doing. This reduces the blind children in the class to only a passive audience, and his/her opportunity to develop process skills is severely

curtailed. Before demonstration is carried out, they should aim for maximum pupil participation by questioning and prompting. Some practical points regarding demonstration lessons are

- The teachers or the person responsible for carrying out the demonstration should try it out before class use
- The person demonstrating it should be audible
- The best demonstration are usually simple and start with guide results.
- Demonstration technique should include planned questioning so that the teacher receives feed back regarding the children understanding of what is going on.
- Questioning keeps the class alert and attentive. silent demonstration is advisable with the hearing handicapped children
- The demonstration should generate a feeling of interest and excitement and the outcome should if possible be unexpected and dramatic.
- Analysis following the demonstration should be a class write up writing about each step, discussing how and why it happened.

Working group:- group in this context refers to sub-units of the whole class. The teacher must choose between having children working individually in small or large groups or as a class through group work children becomes used to working together and get a feeling of belonging to their group. Teachers guide are able to meet each group and meeting only two or three children at a time will he better able to guide and evaluate their progress. If groups are working at different aspect of a topic only a limited amount of experimental materials are needed if however all groups are involved in the same task duplication of materials will be necessary. The size of group is often a problem. If the group are two, three or four children, adequate experimental materials need to be at hand. Successful group works in sciences in not an easy thing to curtail. The teacher who uses individual to learn in these situations. Planning and grading of problems to be investigated needs to be carefully done. The role of

individuals within the groups and methods of reporting results need to be established. Time must also be allocated for conference with each group. (Brian close 1942).

2.6 THE ROLE OF COMPUTER IN EDUCATING THE HEARING HANDICAPPED AND THE PLACE OF PRESENT STUDIES:-

Computer is one of the end-time machines that has been designed to easy life by reducing the cumbersomness of some jobs getting more accurate answer and also faster in a complicated works, computer has in one away or the other been more useful to every body in this age, so the other been more useful to every body in this age, so the hearing handicapped child should not be left I behind. The hearing handicapped child because of his or her inability to hear finds it very difficult in understanding and copping well in science causes teachers has been exploring many avenue to bridge the gap between the normal children and the hearing handicapped children. It is still on this experimental or exploration research that I am trying to carry cut research an using computer to teach the hearing handicapped children some selected topics in science basic on their science syllabus to see if their will be any significant difference. I have already pre-empted that the use of computer will have some significant difference an deaf children in the regular school usually suffer from what is call communication gap, this is because their teachers are not trained in the use of sign language and the deaf child will not hear the normal English language the teacher is speaking. Even in special schools the children still suffer from communication gap because must at times you find out that the deaf children are more advanced than the teacher in sign language and vice versa either of this can course communications gap for he child there by the child will not well informed.

It is based on this now believed that computer at this juncture can come to aid of this deaf children the teacher only need to prepare the lesson not in the way that the deaf children will be able to understand by using that English that is of their standard there by simplifying the text book, and making room for them to answer some question often each step the teacher

than store the lesson plans in a diskette and kept in the computer room library so that each topic the children need to study they will pick up the diskette slate it in and the computer begins to teach them stage by stage

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 INTRODUCTION

This method deals with the various methods adopted for the present study. Specifically it deals with the study population statistical procedures and instruments used in collecting data.

3.2 ANALYSIS OF THE EXISTING SYSTEM

In teaching science to the deaf children these are the existing method

- Oral or verbal instructions in a normal schools.
- Sign language instructions in a special school.
- Use of tactile materials or teaching aids in the normal and special schools.

In oral instructions in the normal school, here deaf children are mainstreamed with the normal children in a normal school situation and since most of the teachers if not all the teachers are not trained in the used of sign language. They used the normal English language and also because of their lack of training in special field they lack the individualized instruction ability which every trained teacher should have and so this children are left behind in not subject especial science. Hence the use of CAL.

IN SIGN LANGUAGE INSTRUCION:- Hence the children (deaf) are in their normal special school and the teachers are trained because most of this teachers or not deaf so they only communicate with sign language only when they are in class, they are not use to the language as the children themselves. So just as I have said earlier there may be communication gap and on the other hand the teachers vocabulary acquisition in sign language may be higher than that of the children and because of the difficulties of signing the wards the teacher may be using higher vocabularies that he can sign and so there will be still a communication gap which will lead to lack of understanding of the topic hence C.A.L

USE OF TACTILE MATERIALS OR TEACHING AID.:- here both the special teacher and the normal teacher uses tactile material to help in teaching the children because children tend to remember what they see more than what they read or hear. But the problem of communication still comes in because the normal teacher will explain the tactile material in relation to the topic using English or verbal language and thus communication gap so also the special teacher may explain using the sign language but be higher or below average vocabulary there by resulting there by resulting to communication gap and hence C.A.L

3.3 ANALYSIS OF THE PROPOSED SYSTEM

The analysis of the purpose of the proposed system is only to find out if compute could help to activate the problems faced by deaf children in a normal school as well as those faced by deaf in a special school. The problem involved in this study attracted the following statement of problems.

1. Analysis of J.S III curriculum most especially the aspects on digestive and respiratory system, to identify aspects on the digestive that should be taught at their level.
2. To determine the effect of the drawing and the teaching using computer on the over all learning outcome of the experiment group of the deaf student.
3. Selecting the character of letters to be used in writing, the normal of statement that the computer screen can accommodate at a time.
4. Preparing the lesson note which will e accompany by some specially designed question that the student need to answer for better understanding of the topic.
5. To administer test based on digestive and respiratory system before and after C.A.L and the analysis of the results and comparisons of the achievement data to find out if there is any improvement and if there is what to degree.
6. The identification, analysis, calculation, synthesis of related literature on C.A.L.

3.4 WEAKNESS OF EXISTING SYSTEM

The existing system does not allow the deaf child for equal opportunity of benefiting from the classroom teaching like the other children because of him/her having handicapping condition and since they do not benefit equally with their hearing mates it brings low their performances in the class generally.

Even in a situation where children are being taught in a special school with sign language as a medium of communication, the deaf child or children still face with some problems lack of understanding which may arise as a result of the vocabulary level of the teacher and the children. The children may also have problems as a result of under population of the teachers in special schools. Also still in a special school, children are faced with communication problems which is brought about by sign language itself. This type of problem is as a result of differences in ways of signing same words e.g. the way Americans sign same words is different from the way the British sign same words and so this brings confusion to the children, if a child is used to reading American books and the teacher is a British trained teacher, the child may find it very difficult to decode the teacher's signing.

Also because of the handicapping condition of the children, their science lessons tend to be tactile-material based, this is done to help them to understand any concept or topic that is being taught to them easily but unfortunately that is not always the case, when these teaching aids (tactile material) are being presented in the class for the children to use it to understand the concept they are being taught some explanation by the teacher is inevitable and because of the communication gap that sometimes exist in sign language, the children may still not understand the concept. Still in a so called special school for the handicapped even where the standard of vocabulary acquisition of both teacher and the children are equal, there may still be detourings for the children as a result of the cumbersomeness of sign language. We all know that sign language is psychomotor in nature and so the amount of energy spent in

communication will easily way the teacher down easily. Hence the lesson might have not been fully understand by the student but the teacher can no longer continue.

3.5 ADVANTAGES OF PROPOSED SYSEM

Having known the disadvantages of the existing system. I will now use the advantages to explain the advantages of this proposed system. But it will be remember that I am not condemning the existing system completely I am saying that the proposed system (C.A.L) will enhance or help the existing method or system to produce more effective result on the children.

The proposed system which is simply computer assisted learn, is a solution where buy the teachers lesson plane or note will be store in a diskette so that this deaf children who because of there handicapping condition did not benefit fully like there normal mates will use the medium and teach themselves using the teacher simplified lesson note in other to bridge the gap between the normal and the handicapped deaf children in the class.

C.A.L. can actually enhance or improve the three existing method of teaching the deaf.

VERBAL INSTRUCTION IN A NORMAL SCHOOL METHOD: This has been explain in the previous pages in details, it is simply a situation where a normal children's teacher also teach the deaf children using the same verbal method. Hence because the deaf children can not benefit from such class as a result of their lost of the sense of hearing, and the teacher on the other side can not help the child since he or she has no training as how to teach the deaf children. In a situation like this C.A.L. can easily come into help both the teacher and the deaf children, the teacher only needed to prepare his or her lesson note in a simplified way and store it in a diskette so that after each lesson the children will pick the diskette go to the PC and play it thereby teaching themselves and by answering some of the question the teacher will ask them on the lesson note, it will help to known if they have understood the topic or not.

SIGN LANGUAGE INSTRUCTION IN A SPECIAL SCHOOL:- this also a situation where by the specially trained teachers for handicapped children are teaching them is special schools

made for the handicapped, so have the teacher use the expected method and language i.e. sign language yet there is still problems that exists such American and British not having the same way of signing same word, the standard of the child and the teacher in vocabulary acquisition in sign language may not the same and thus problem of understanding on the side of the child.

Here the proposed system C.A.L came as the usual to help the children to make up in the areas where they are not cleared in the class and still the same way teacher papers the lesson note store it in a diskettes for the children to help themselves out.

THE USE OF TACTILE MATERIAL AS TEACHING AIDS:- This is also simply the use of teaching aids in teaching the deaf children in other to enhance their understanding ability. In the method, the need to use verbal language or sign language to explain the teaching aid in relation to the topic still posses problem of verbal and sign language to this method, and since C.A.L can be used to enhance this problems as explained earlier, so it should also be used here, the teacher will simplify the explanation of the teaching aids in relation to the topic store in the diskette for the deaf children consumption. By so doing C.A.L or computer it self will be helpful to the handicapped deaf children just as it was other people by making learning easier for them.

3.6 POPULATION/SAMPLE SELECTION

This study was carried out in Gindiri special school for the blind in Plateau state and only the JS III students of the institution did not cover the effect of the computer assisted learning in other classes, in addition the study was restricted to JS III syllabus on the digestive and respiratory system. The population of the research includes all the hearing disabled handicapped children in JS III in Gindiri special school.

There are only twenty-two hearing handicapped in the two class of JS III as a result of their fewness only fourteen are used for the experiment.

The sample for this study consist of two different categories of deaf handicapped JS III students, the categories consist of random selection of seven hearing handicapped children from the twenty-two hearing handicapped children in JS III. This group was designated experimental group. The second category also consists of seven hearing handicapped children the group was designated as the control group where randomly selected from among the pool of twenty –two hearing handicapped JS III children in Gindiri special school for the blind. Care was taken in the equivalence of the experimental and the control group at the beginning of thew experiment. This was done by using the continuos assessment scores and the last end of term scores of students as the criterion for assigning the student into control and experimental group. Further evidence of equivalence was obtained from the comparison of the pretest scores of the experimental and control group.

3.7 RESEARCH PROCEDURE

The instrument for gathering data for the research is a 30-item science achievement test.

The test was based on this topics

- i. Organs of respiratory and their functions
- ii. Concept and importance of respiration
- iii. Concept of digestion
- iv. Process of digestion

Taught during the treatment period, five items in each case tested the mastery of the concept though in each topics:- the maximum score attainable on the test is 30 marks while the minimum score attainable is zero mark expert judgement was used to validate this test, A group of four primary five science teachers examined the test and considered it valid in content. Using the lest re-test technique the reliability of the test was determined.

The 30 item science achievement test are as follow:-

1. Respiration starts from –

2. The air we breath in is called -- While the one we breath out is called -- (2marks)
3. Write five importance organs of respiration you know. (5 marks)
- 4 say the function of each of them (5 marks)
- 5 Briefly explain the process of respiration. (7 marks)
- 6 Digestion starts from- and ends in— and end in ---- (2 marks)
- 22 An adult should have a total of - - number of teeth in his or her mouth.
- 23 Name the four kinds of the teeth we have ? (4 marks)
- 24 Name the three organs of digestion you know. (3 marks)

LESSON PLAN

<u>NAME OF TEACHER</u>	Miss Chinyere J Igwegbe
<u>SCHOOL</u>	Gindiriy Special School
<u>CLASS</u>	J S S III
<u>SUBJECT</u>	Integrated Science
<u>TOPIC</u>	Respiration System

PREVIOUS KNOWLEDGE :- The children has been breadth in and out, and they know that you breadth in and out through the nose and mouth.

OBJECTIVE:- By the end of this lesson, the children will be able to explain the concept of breathing.

INTRODUCTION:- The teacher introduces the lesson by asking the children to breadth in and out she follows this exercise up with some questions such as

1. what do you breadth in and out.
2. Why do we breadth?
3. What part of the air do we in and what part do we breath out.

PRESENTATION STEP 1

TEACHER'S ACTIVITIES

The teacher presents the lesson by asking the children to explain what they understand by the word breathing. Breathing is taken in and out of air through the nose and in contains oxygen while the one we breath contains carbon dioxide

STEP 2

The teacher asks the children to describe breathing to man
Breathing helps us to survive, if one stops breathing he or she will suffocate and thus die. The teacher ask the children how they feel when they have cough and cater and can not breath freely as they usually do?

STEP 3

The teacher asks the children to give some Importance of air for example

1. It is used in breathing.
2. It is used to keep us cold or warm when we
Feel warm or cold.
- 3 air helps balloons and car
- 4 air helps the airplane to fly in the sky.
- 5 air helps the birds of the earth to fly.
- 6 Air is importance for burning.

CHILDREN'S ACTIVITIES

The children responds by saying what breathing is and what the air we breath in and out is called.
we breath out contains

The children responds by saying importance of some importance of air to man

EVALUATION:- The teacher evaluates the lesson by asking the children questions to see if she has achieved her objective or not for example

1. State six importance of air.
2. What is respiration
3. What is digestion
4. Why is respiration important.

CONCLUSION:- The teacher concludes the lesson by giving the children home work for example

1. Write six importance of air.
2. Briefly explain what breathing means.

NAME OF TEACHER Miss _Chinyere J Igwegbe

SCHOOL Gindiriy Special School

CLASS J S S III

SUBJECT Integrated Science

TOPIC Organs of Respiration and their Function System

PREVIOUS KNOWLEDGE :- The children has know what respiration is.

OBJECTIVE: By the end of this lesson the children will be able to name some important organs used for respiration.

PRESENTATION STEP 1

The teacher presents the lesson by asking the children to explain what a system is.

The human body is made up of tiny parts called cells. You Can't see the cell with your physically eyes. A group of Cells combined together is called organ, and a group of Organs which combines together to perform some Functions is called a system, so in breathing system we Have a lot of organs involved.

STEP 2

The teacher ask the children to say other internal organs Of respiration apart from mouth and mouth and non which are external

1. Trachea
2. Ribs
3. Lungs
4. Hearts
5. Bronchus
6. Diaphram

STEP 3

The teacher asks the children to give the functions of The functions of each of the above named organs

- (1) Windpipe – it sends the oxygen to the lungs and sends the carbondioxide to the nose for escape.
- (2) Heart – The heart pumps the blood to all parts of the body.
- (3) Ribs – Protects the Lungs and the heart
- (4) Lungs – Purifies the air for the body to use
- (5) Bronchus (wind pipe) supplies air to the left and Right lungs.
- (6) Diaphragm- Contraction and relaxation causes Breathing in of air.

EVALUATION:- The teacher evaluates the lesson by asking the children questions to see if she has achieved her objective

1. Name some organs that are used in respiration
2. State the functions of the organs you have named

CHILDREN'S ACTIVITIES

The children respond by
Saying what a system is

The children responds by
naming some organs used
in respiration

The children responds
by saying the functions
of sum of the organs

CONCLUSION: The teacher concludes the lesson by giving the children home work.

NAME OF TEACHER Miss _Chinyere J Igwegbe

SCHOOL Gindiriy Special School

CLASS J S S III

SUBJECT Integrated Science

TOPIC Respiration Process

LESSON 3

TEACHING AIDS: Man made respiratory organs

PREVIOUS KNOWLEDGE: The children have known some important organs of respiration.

OBJECTIVE: By the end of this lesson the children will be able to explain the process of respiration.

INTRODUCTION: The teacher introduces the lesson by asking the children some question on the previous lesson for example:-

1. Name some organs that are used in respiration
2. State the functions of each organ e.t.c.

PRESENTATION STEP 1

TEACHER'S ACTIVITIES

The teacher presents the lesson by asking the children to Breath in and out. She now ask them to explain the process of breathing in and out.

1. The air enters the body through the nose or mouth
2. The air then passes to the lungs through the trachea (wind pipe).
3. The windpipe branches into two parts (left and right)

CHILDREN'S ACTIVITIES

Each part is called bronchus

4. Each bronchus leads to left or right lungs so it is
Collects the air from the wind pipe and empty it in
the lungs
- 5 The air is then purified in the lungs and used by
the body
6. Below the lungs and ribs is a sheet of muscles called
the Diaphragm the contraction and relaxation of this
of this sheet causes breathing out and in of air.

STEP 2

The air enter the system through the nose or the mouth.
It passes through the wind pipe to the two bronchus, the
Bronchus now carries the air so the body will absorb the
Oxygen in the air. When the air enters the lungs, the
Diaphragm expands causing the lungs to expands also
So that it will be able to contain the quantity of air
That has come in. After the oxygen has been used
by the body the Diaphragm will contract forcing the lungs
to contract. When the lungs contracts, the air that is left
in it (carbondioxide) will be forced out of the body
through the same way it come in the body.

The children respond by
explaining the process of
respiration

EVALUATION :- The teacher evaluate the lesson by asking the children to briefly
explain the process of respiration starting from nose to mouth.

CONCLUSION :- The teacher conclude the lesson by giving the children
homework based on the three lesson on respiration

- explain the concept of respiration
- Name five organs of respiration
- explain briefly the process of respiration

NAME OF TEACHER

Chinyere .J. Igwegbe

SCHOOL

General special school

CLASS

JSS III

SUBJECT

Integrated science

TOPIC

Digestive system (Teeth)

LESSON 1

Teaching Aid The teacher brings animals teeth to class

PREVIOUS KNOWLEDGE The children must have known different set of teeth in the mouth.

OBJECTIVE By the end of this lesson the children will be able to

- (1) Name the different type of teeth
- (2) State the function of each set of teeth
- (3) Describe their structure

INTODUCCTION:- The teacher introduces the lesson by asking the children to count the number of the teeth in their mouth(32)

PRESENTATION STEP 1

<u>TEACHER'S ACTIVITIES</u>	<u>CHILDREN ACTIVITIES</u>
The teacher present the lesson by telling the children that every adult should have a total of 32 teeth in his or her mouth. She list the different types of teeth we have INCISSORS, CANNING, MOLARS, PREMOLARS.	The children respond by stating the name of the teeth in the mouth

STEP 2

The teacher ask the children to explain the Functions of these saying the functions these are
Incisors- This is used for cutting
Canning- This is used for teaching grinding

STEP 3

The teacher describe the shape of each teeth for example incisors: it is sharper than the rest of the teeth so that you can easily cut your food with it
Canning:- unlike the incisor is pointed so that It can easily tear food. teeth. Molar/ premolar:- They are flat with rough edges so that when you place food on top of it, it can easily grind to soft to make the swallow easier.

The children responds by saying the functions of the different type of teeth in in the mouth

The children respond by saying the shape of each teeth

EVALUATION :- The teacher evaluates the lesson by asking the children question that can help her to know if the she has achieved her objectives or not for example ;

- (1) Name the four types of teeth we have
- (2) What are their functions
- (3) Describe each and every one of them

CONCLUSION:- The teacher concludes the lesson by giving the children homework for example Braille the four types of teeth in the mouth and their functions.

LESSON 2

<u>NAME OF TEACHER</u>	Chinyere .J. Igwegbe
<u>SCHOOL</u>	Gindri special school
<u>CLASS</u>	J.S.S III
<u>SUBJECT</u>	Integrated science
<u>TOPIC</u>	Digestive system (organs of digestion)

TEACHING AIDS:- Man made digestive organs.

OBJECTIVES:- By the end of this lesson the children will be able to name different organs responsible for digestion in man.

INTRODUCTION:- The teacher introduces the lesson by asking the children to name those organs that are responsible for digestion.

PRESENTATION STEP ONE

The teacher presents the lesson by explaining and defining the word digestion i.e it is the breaking down of the food substance for the easy usage of the body

STEP TWO

The teacher once again reminds the children once again what organ and system are . She goes further to list some organs that is responsible for digestion in man :

- 1) mouth
- 2) gullet
- 3) pancreas
- 4) stomach
- 5) liver
- 6) large intestine
- 7) small intestine
- 8)anus

STEP THREE

The teacher explains the functions of each organs of the digestion.

CHILDREN'S ACTIVITES

The children responds by

Mouth - the teeth grinds the food , it is mixed in the mouth with saliva so that it will be easy to swallowed
Gullet -the chewed food passes from the mouth to the Gullet.

Stomach- from the gullet the food passes to the stomach , the stomach produces some acids and liquid which kills any diseases in the food, it reduces the food into simpler things or bits.

Small intestine -From the stomach the food passes to Small intestine

Liver/Produces liquid which helps to complete the digestion in the small intestine

Large intestine - It collects the undigested food and sends it to the anus.

ANUS -The undigested food leaves the body through the anus.

EVALUATION :- The teacher re evaluate the less so by asking the children question based on the topic for example Name some organs of the digestive system you know

CONCLUSION :- The teacher concludes the lesson by giving the children home work for examples

(1) Write the organs of the digestion you know and their function

(2) Digestion start from ----- and ends at -----.

LESSON 3

NAME OF TEACHER:

Chinyere J. Igwegbe.

SCHOOL :

Grindiri special school.

CLASS:

JSS III

SUBJECT:

INTERGRATED SCIENCE

naming some of the organs
of digestion and their functions

TOPIC :

Process of digestion

TEACHING AIDS - Man made digestive organ.

PREVIOUS KNOWLEDGE :- The children has known about different organ that are involved in digestion in man.

OBJECTIVE : -By the end of this lesson the children will be able to explain the process of digestion starting from mouth to anus.

INTRODCTION :- The teacher introduces the lesson by asking the children to explain in their own words the process of digestion based on the previous knowledge on digestion.

PRESENTATION STEO 1:- The teacher present the lesson by explaining the process of digestion.

TEACHER ACTIVITIES

CHILDREN ACTIVITIES

Digestion start from the mouth, the food is being chewed in the mouth by the teeth, the mouth produces saliva which mixes up with the food and making the swallowing easy. The food now passes from the mouth to the gullet and from there to the stomach. the food stays for sometime in the stomach, the stomach then produces some acids and liquids which kill any disease germs that may be present in the food. Here, also the food may be reduce to simpler particles from the stomach, the food passes into the small intestine. In the small intestine liquids (juices) is produced by the liver and pancreas which help to complete the breaking down of the food to the texture that the body will be able to absorb it and make use of it. The undigested food will then move from the small intestine to large intestine and from there to the anus from where it leaves the body.

EVALUATION :- teacher evaluates the lesson by asking the children questions.

- i Briefly write the process of digestion
- ii State the function of each organ.

CONCLUSION :- The teacher concludes the lesson by given them home work. In your own word briefly write down the process of digestion.

II IMPLEMENTATION COST

STAFF TRAINING COST ₦ 10,000.

since the staff are teacher in the school.

TOTAL ₦10,000.

III HARD WARE COST

MONITOR, PROCESSOR AND KEYBOARD ₦38,000

PRINTERS, RIBBON, TURNER ₦30,000

ELECTRICAL APPLIANCES ₦50,000.

TOTAL ₦116,000.

IV USERS FACILITIES COST

TEXT BOOKS COST ₦15,000

FURNITURE COST ₦10,000.

TOTAL ₦25,000.

DEVELOPMENT AND OPERATING COST

G. TOTAL. ₦236,000.

CHAPTER FOUR

SYSTEM IMPLEMENTATION AND DESIGN

4.1 SYSTEM IMPLEMENTATION AND APPLICATION

Implementing the system has to do with putting into practical usage the new system (CAL), thus has to do with purchasing the necessary equipment both software and hardware, as they will be fully described in 4.3 and 4.4 respectively.

The area of application of the system (C.A.L) is the special school for the handicap Gindri in Plateau State. The instructions are to be taught first on how to apply the system. Their training could last for at least a week before they could in turn teach the students. In applying the system also, lesson notes has to be taken by each student while going through the software, exercise need to be taken answered in other to test their ability.

4.2 HARDWARE REQUIREMENT

The hardware requirement includes

- i. Pentium 166486 Base PC, 66MHz and above
- ii. Minimum 16 MB main memory
- iii. 2.5 hard disk drive
- v. 14 SVGA Colour Monitor
- vi. Keyboard (101 enhanced)
- vii. Printers e.g
Pavallely Serial Interface
360 x 36 dpi Resolution

Speed Draft Mode 400

APC 600 VA UPS

Tape Streamer

Staval Stabilizer.

4.13 SOFTWARE REQUIREMENT

The software development is a process transferring the newly designed system into a computer program using a high level language or software development package. The choice of software development package or high level language to use for coding was oriented towards database management software. This is a result of the fact that the proposed system involve a lot of record keeping and much of scientific computation, hence Dbase IV was used as the choice of software development package for the proposed system.

4.4 CHANGE OVER PROCEDURE

Finally after every aspect of the system was checked and verified to ensure its operational accuracy and solids results where obtained from the use of test data and live data. Since much of paper work is required to run the new system, runs con-currently with old system, processing exactly the some data and producing identical results. This procedure can continue until the user is satisfied and feels comfortable with the new system.

4.5 STARTING THE SYSTEM

Insert the installation diskette into the computer and install the program. Access it to make sure it is working fine. Then the teachers could be also taught on how to install the program and every other basics.

CHAPTER FIVE

DISCUSSION SUMMARY AND CONCLUSION.

5.1 INTRODUCTION

In this chapter, attention is focussed on the discussion the data analysed in the previous chapter. The research question stated in the introductory chapter will be used to guide the discussion. This will help the researcher to present the discussion in a chronological sequence as well as help the reader to keep track of the trend of the discussion. The chapter equally a summary of the entire study, the conclusions reached and the recommendation of the researcher. Above all the contribution of the study of knowledge in the field of special education where highlighted. Some useful suggestions for further research in the area of present study where proposed.

5.2 DISCUSSION.

Research question 1:- What are the trend of achievement of the research experimental and control group on the J.S.S III science achievement test.

The data in the table 3.8 shows that the standard deviation of the control group pre-test is higher than that of the experiment test.

Research question 2:- Are the achievement of control and experimental group significantly different on the pre-test. Still using the table on 3.8 we can see that there is no significant difference on the achievement of the control and experimental group pre-test, the highest score of the experimental group is 10 with 6.05 as the standard deviation of the group while the highest score in the control group is 8 with the standard deviation of 3.51 for the group.

Research question 3:- Is there any significant difference between the science achievement of hearing handicapped student who were taught with computer added learning (CAL) and those who were not taught with computer added learning ?

A comparison of post test score of the experimental and control group shows that the mean score of the experiment group is quite superior to the mean score of control group 9.6 indeed the experimental group performed almost three times better than the control group on the post test.

Since the pre-test score of the two groups were not significantly different at the beginning of the experiment, one can therefore attribute the superiority of the experimental group to the effect of application CAL facilitate and improves the science learning of the hearing students.

5.3 SUMMARY

This study was aimed at finding out if computer could also be beneficial to the less privileged ones like the handicapped students e.g "deaf" in order to achieve this, several lesson notes were produced based on the topic to be taught to the children (respiratory and digestive system) which were used to teach the control group in the class and the experimental group with computer, in which the experimental group proved superior after exposing the two groups to learning and testing.

The research also treated the following

- The background of the study
- The problem of the study
- Research questions
- Hypothesis
- Rationale for the study
- The scope and delimitation
- Definition of terms e.t.c

The next chapter, which was literature review dealt extensively with the review of related literature to the study some literature point reviewed, include

- Government Policy on Education of the Handicapped

- Education of the hearing handicapped
- Science Education of the hearing handicapped
- Teaching Strategies
- Resources for teaching and learning in hearing handicapped class.

In chapter three of this study, the methodology used in conducting the research was discussed and this include:-

- Research boundaries
- Population/Sample selection
- Research design
- Instrumentation
- Data analysis plan

Secondly the study was restricted exclusively to J S S III syllabus on the digestive and respirative science syllabus are not covered in the study.

The research is a quasi experimental one it adapted pre-test and post test and control group design. Under instrumentation, the instrument used for gathering data for this study is a 30 item science achievement test, which was based on the following topic.

1. Organs of respiration
2. Concept of respiration
3. Process of respiration
4. Concept of digestion
5. Organs of digestion
6. Process of digestion

The next chapter which is chapter four deals on system implementation and design. This has to do with putting into practical usage the new system which has to do with purchasing the necessary equipment both software and hardware. The software development is a process of transferring the newly designed system into a computer program using high level

language, while hardware are those sold and tangible parts of the computer like keyboard, printer, stabiliser e.t.c. This chapter also talk of the change over procedure which has to do with changing from the old system to the new system which has to do with re-initialising the entire system.

Also this chapter dealt with the programming which was written in Dbase IV.

5.4 CONCLUSION

From the data collected and the result obtained, there is no doubt that the CAL has an outstanding effect on the education of the hearing handicapped and so one can attribute poor performance of hearing handicapped children in the normal school as a result of communication gap, also it has been proved that computer will not one bridge the gap but also will contribute greatly to education of the hearing handicapped students both in normal and special school. Hence computer has also be found useful not and to normal people but also to disabled ones.

5.5 RECOMENDATION

The following recommendation was made based on the following result of the findings

- i. This research should be done in a larger scale so that more meaningful generation can be made.
- ii The use of CAL for teaching the hearing handicapped student should be encouraged.
- iii Secondary school teachers in a regular school that has hearing handicapped children should be trained in the development of the CAL and its use to facilitate teaching and learning.
- iv The federal government should introduce the use of computer in special schools.

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APPENDIX

J S S III SCIENCE ACHIEVEMENT TEST

- 1 Write five important organs of respiration
- 6 The air we breath in is called ----- while the air we breath out is called -

- 8 Write importance of the five organs of your mention above.
- 13 Briefly explain the process of respiration (5marks)
- 18 Digestion start from ----- and end in -----
- 20 An adult should have a total of----- number of teeth.
- 21 Name the four kind of teeth you know
- 25 Name five organs of digestion you know.

APENDIX II PROGRAM CODE

```
set echo off
set status off
set score off
set talk off
set date to briti
set color to w/b+,,r+
clear
```

```
do while .T.
```

```
*=====W=====
```

```
@1,4 to 7,4 panel
@7,4 to 7,7 pane
@5,7 to 7,7 panel
@5,7 to 5,9 panel
@5,9 to 7,9 panel
@7,9 to 7,12 panel
@1,12 to 7,12 panel
```

```
*=====E=====
```

```
@1,14 to 1,19 panel
@1,14 to 7,14 pane
@7,14 to 7,19 panel
@4,14 to 4,17 panel
```

```
*=====L=====
```

```
@1,21 to 7,21 panel
```

@7,21 to 7,25 panel

*=====C=====

@1,27 to 1,33 panel

@1,27 to 7,27 pane

@7,27 to 7,33 panel

*=====O=====

@1,35 to 7,41 panel

*=====M=====

@1,43 to 7,43 panel

@1,43 to 1,45 panel

@1,45 to 3,45 panel

@3,45 to 3,47 panel

@1,47 to 3,47 panel

@1,47 to 1,49 pane

@1,49 to 7,49 panel

*=====E=====

@1,51 to 1,56 panel

@1,51 to 7,51 pane

@7,51 to 7,56 panel

@4,51 to 4,54 panel

*=====T=====

@1,61 to 1,69 panel

@1,65 to 7,65 panel

*=====O=====

@1,71 to 7,77 panel

*=====C=====

@9,20 to 9,30 panel

@9,20 to 15,20 pane

@15,20 to 15,30 panel

*=====A=====

@9,35 to 9,47 panel

@9,35 to 15,35 panel

@9,47 to 15,47 panel

@12,35 to 12,47 pane

*=====L=====

@9,52 to 15,52 panel

@15,52 to 15,59 panel

@16,20 to 18,68 doub

@17,22 say "COMPUTER ASSISTED LEARN"

@16,20 FILL TO 18,68 COLOR GR+

@19,20 TO 24,68

@20,22 say "A PROJECT SUBMITTED TO POST GRADUATE SCHOOL"

```
@21,22 SAY "DEPARTMENT OF MATHEMATICS/COMPUTER SCIENCE"  
@22,22 SAY "FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA"  
@23,22 SAY " BY: MRS CHINYERE J. IGWEGBE      "  
wait " "
```

DO TITLE

```
*-----THE MAIN MENU----->  
*PROCEDURE MAINMENU  
DEFINE POPUP MAINM FROM 10,26 TO 22,48  
DEFINE BAR 1 OF MAINM PROMPT " M A I N M E N U " SKIP  
DEFINE BAR 2 OF MAINM PROMPT " ===== " SKIP  
DEFINE BAR 4 OF MAINM PROMPT "   TUTORIAL   ";  
  MESSAGE "Teaches you Respiratory System and Digestive System"  
DEFINE BAR 6 OF MAINM PROMPT " EXPERIMENTAL REPORT ";  
  MESSAGE "Report on experimental and Research Analysis carried out"  
DEFINE BAR 8 OF MAINM PROMPT "   SUMMARY   ";  
  MESSAGE "Summary and conclusion on the research/experiment "  
DEFINE BAR 10 OF MAINM PROMPT "   EXIT   ";  
  MESSAGE "Leaving the Computer Assisted Learn Programme"  
ON SELECTION POPUP MAINM DO MAIN
```

ACTIVATE POPUP MAINM

```
enddo  
set echo on  
set status on  
set score on  
set talk on  
set date to briti  
set color to w/b+,,r+  
set color to \
```

```
*-----TITLE----->  
PROCEDURE TITLE  
clear  
@4,14 to 9,62 DOUB  
@4,14 FILL TO 9,62 COLOR r+  
SET COLOR TO g+  
@5,16 say "C O M P U T E R   A S S I S T E D   L E A R N"  
@6,16 SAY "   F O R   T E A C H I N G   R E S P I R A T O R Y   S Y S T E M"  
@7,16 SAY "           A N D"  
@8,16 SAY "           D I G E S T I V E   S Y S T E M           "  
set color to w/b+,,r  
return
```

PROCEDURE MAIN

DO CASE

CASE BAR() = 4

DO TUTOR

CASE BAR() = 6

```

DO EXPERI
CASE BAR() = 8
DO SUMMA
CASE BAR() = 10
CLEAR
quit
RETURN

```

```
ENDCASE
```

```
RETURN
```

```
PROCEDURE EXPERI
```

```
clear
```

```
@2,20 to 4,60 double
```

```
@3,22 say "E X P E R I M E N T A L R E P O R T "
```

```
@5,10 SAY " "
```

```
TEXT
```

	MAXIMUM SCORE ATTAINABLE	HIGHEST SCORE ATTAINABLE	LOWEST SCORE ATTAINABLE	MEANS CORE	MODE	SD
--	-----------------------------	-----------------------------	----------------------------	------------	------	----

```
EXPERIMENTAL
```

GROUP	30	7	0	2.3	0	6.05
-------	----	---	---	-----	---	------

```
CONTROL GROUP
```

FIRST TEST	30	8	0	2.7	0	3.51
------------	----	---	---	-----	---	------

```
EXPERIMENTAL
```

GROUP	30	30	23	28	30	2.67
-------	----	----	----	----	----	------

```
2ND TEST
```

```
ENDTEXT
```

```
@20,10 say " "
```

```
wait
```

```
@6,0 clear to 22,78
```

```
TEXT
```

From the above table the mean score of the experimental group and control group are about the same. However, the standard deviation (SD) of the control group in the first test is higher than SD of the experimental group i.e. exposing them to C.A.L. the mean of the experimental group is three times as big as that of the control group who were not exposed to C.A.L. From this we can conclude by saying that exposing deaf children to C.A.L. will be of great benefit for them, towards their science learning.

```
ENDTEXT
```

```
wait
```

```
do title
```

```
return
```

```
PROCEDURE SUMMA
```

```
clear
```

```
@2,20 to 4,40 double
```

```
@3,22 say "S U M M A R Y "
```

```
@5,10 SAY " "
```

```
TEXT
```

In summary, both of these topics (Respiration and Digestion) are very important. We have their importance to life especially to human life.

ENDTEXT

@20,10 say " "

wait

clear

do title

return

PROCEDURE TUTOR

DO TITLE

store 0 to mchoice

@11,32 to 13,51 doub

@12,34 say "TUTORIAL"

@14,20 TO 23,60

@16,28 SAY "[1] RESPIRATORY SYSTEM"

@18,28 SAY "[2] DIGESTIVE SYSTEM"

@20,28 SAY "[3] EXIT TO MAIN MENU"

@22,25 SAY "Please enter your choice (1-3): " get mchoice pict "9" range 1,3

read

DO CASE

CASE mchoice = 1

DO RESPI

CASE mchoice = 2

DO DIGEST

CASE mchoice = 3

clear

do title

return

ENDCASE

RETURN

PROCEDURE RESPI

clear

store 0 to nchoice

set color to r+/b,,gr

@4,21 SAY "RESPIRATORY SYSTEM"

set color to w+/b,,gr

@5,21 TO 5,54 DOUB

@6,20 TO 16,56

@8,24 SAY "[1] LESSON ONE "

@10,24 SAY "[2] LESSON TWO"

@12,24 SAY "[3] LESSON THREE"

@14,24 SAY "[4] EXIT TO TUTORIAL MAIN MENU"

@19,18 TO 21,58

@20,22 SAY "Please Enter Your Choice (1-6):" get nchoice pict "9" range 1,6

read

DO CASE

CASE nchoice = 1

DO INTRO

CASE nchoice = 2

DO LESONE

CASE nchoice = 3

DO LESTWO
CASE nchoice = 4
DO TUTOR

ENDCASE
RETURN

PROCEDURE INTRO
CLEAR

@2,16 SAY "INTRODUCTION TO RESPIRATORY SYSTEM"

@3,16 SAY "*****"

@4,4 TO 4,60

TEXT

SUBJECT: Intergrated Science

TOPIC: Respiration System

INTRODUCTION: Please breath in and out !

QUESTIONS: (1) What do you breath in and out ?
(2) Why do we breath ?
(3) What part of air do we take in and what part
do we breath out ?

BREATHING: is taking in and out of air through the nose and mouth.
The air we take in contains oxygen while the one we
breath out contains carbon dioxide.

QUESTION: Whta is the important of breathing to man?

ENDTEXT

@23,4 TO 23,60

wait

@9,1 clear to 22,78

TEXT

ANSWER: Breathing helps us to survive, if one stops breathing
he or she will suffocate and die.

QUESTIONS: (1) What do you do when you have cough and cather and you
cannot freely breath ?
(2) What is the importance of air ?

ANSWER: (1) It is used in breathing
(2) It is used to keep us cold or warm when we feel warm or cold
(3) Air helps the aeroplane,bird to fly and support burning

QUESTIONS: (1) State six importance of air
(2) What is respiration ?
(3) What is digestion ?
(4) Why is respiration important ?

ENDTEXT

@23,4 TO 23,60

wait

DO RESPI

return

PROCEDURE LESONE

CLEAR

@2,16 SAY "RESPIRATION SYSTEM"

@3,16 SAY "*****"

@4,4 TO 4,60

TEXT

SUBJECT: Intergrated Science

TOPIC: Organs of Respiration and their Functions

QUESTION: What is a system ?

ANSWER: The human body is made up of tiny parts called cells.

You can't see the cell with your physical eyes. A group of cells combine together is called organ, and a group of organs which combines together to perform same functions is called a system, so in breathing system we have a lot of organs involved.

Other Internal Organs of Respiration Apart of Mouth are:-

- (1) Trachea
- (2) Ribs
- (3) Lungs
- (4) Hearts
- (5) Branchus
- (6) Diphram

ENDTEXT

@23,4 TO 23,60

wait

@9,1 clear to 22,78

TEXT

QUESTION: What are the functions of those named organs ?

ANSWER: (1) Windpipe :- it sends the oxygen to the lungs and sends the carbondioxide to the nose for escape.

- (2) Heart:- The heart pumps the blood to all parts of the body
- (3) Ribs:- Protects the lungs and the heart
- (4) Lungs:- Purifies the air for the body to use
- (5) Diaphragm:- It contraction and relaxation causes breathing and in of air.

QUESTIONS: (1) Name some organs that are used in respiration

(2) State the functions of the organs you have named

ENDTEXT

wait

DO RESPI

return

PROCEDURE LESTWO

CLEAR

@2,16 SAY "RESPIRATION SYSTEM"

@3,16 SAY "*****"

@4,4 TO 4,60

TEXT

SUBJECT: Intergrated Science

TOPIC: Respiration Process

QUESTION: (1) Name some organs that are used in respiration
(2) State the functions of each organs

The process of Respiration is explained below:-

1. The air enters the body through the nose or mouth
2. The air then passes to the lungs through the tracher (wind pipe)
3. The windpipe branches into two parts (left and right) each part is called bronchus.
4. Each bronchus leads to left or right lungs so it collects the air from the windpipe and empty it in the lungs.
5. The air is then purified in the lungs and used by the body.
6. Below the lungs and ribs is a sheet of muscles called the Diaphragm the contraction and relaxation of this sheet causes breathing out and in of air.

ENDTEXT

@23,4 TO 23,60

wait

@9,1 clear to 22,78

TEXT

More explanation:-

The air enters the system through the nose or the mouth. It passes through the windpipe to the two bronchus, the bronchus now carries the air so that the body will absorb the oxygen in the air when the air enters the lungs.

QUESTIONS: (1) Briefly explain the process of respiration starting staring from the nose or mouth.

- (2) Explain the concept of respiration
- (3) Name five organs of respiration and their functions
- (4) Explain briefly the process of respiration.

ENDTEXT

wait

DO RESPI

return

PROCEDURE DIGEST

clear

store 0 to kchoice

set color to r+/b,,gr

@4,21 SAY "DIGESTIVE SYSTEM"

set color to w+/b,,gr

@5,21 TO 5,54 DOUB

@6,20 TO 16,56

@8,24 SAY "[1] LESSON ONE "

@10,24 SAY "[2] LESSON TWO"

@12,24 SAY "[3] LESSON THREE"

@14,24 SAY "[4] EXIT TO TUTORIAL MENU"

@19,18 TO 21,58

@20,22 SAY "Please Enter Your Choice (1-6):" get kchoice pict "9" range 1,6

read

DO CASE

CASE kchoice = 1
DO INTRO2
CASE kchoice = 2
DO LESONE2
CASE kchoice = 3
DO LESTWO2
CASE kchoice = 4
DO TUTOR

ENDCASE
RETURN

PROCEDURE INTRO2

CLEAR

@2,16 SAY "DIGESTIVE SYSTEM"

@3,16 SAY "*****"

@4,4 TO 4,60

TEXT

SUBJECT: Intergrated Science

TOPIC: Digestive System (Teeth)

QUESTION(S): (1) Name different types of teeth
(2) State the functions of each types of teeth
(3) Describe their structure
(4) Count the number of the teeth in your mouth

EXPLANATION: Every adult should have a total of 32 teeth
in his/her mouth.

TYPES OF TEETH: We have Incissors, Canines, Molars, Premolars.
There functions are :- Incissors - This is used for cutting
Canines:- This is used for tearing and grinding

ENDTEXT

@23,4 TO 23,60

wait

@9,1 clear to 22,78

TEXT

SHAPE OF THE TEETH:-

Incissors:- It is sharper than the rest of the teeth

Canines:- Pointed to easily tear food

Molars/Premolars:- They are flat with wrough edges for
grinding food.

QUESTIONS: (1) Name four types of teeth we have.
(2) What are their functions ?
(3) Describe each and everyone of it.

ENDTEXT

@23,4 TO 23,60

wait

DO DIGEST

return

PROCEDURE LESONE2

CLEAR

@2,16 SAY "DIGESTIVE SYSTEM"

@3,16 SAY "*****"

@4,4 TO 4,60

TEXT

SUBJECT: Intergrated Science

TOPIC: Digestive System (Organs of Digestions)

QUESTION: Name the organs of respiration

DEFINITION: The word digestion i.e it is the breaking down of the food substances for easy usage of the body.

QUESTION: Mention the organs of digestion

ANSWER:-

The organs of digestion in man are:-

- | | | |
|---------------------|------------|---------------------|
| (1) Mouth | (2) Gullet | (3) Stomach |
| (4) PANcreas | (5) Liver | (6) Large Intestine |
| (7) Small Intestine | (8) Anus | |

ENDTEXT

@23,4 TO 23,60

wait

@9,1 clear to 22,78

TEXT

Functions of each organ of digestion:-

Mouth: The teeth grinds the food, it mixed in the mouth with saliaiver so that it will be easy to swallow.

Gullet: The chewed food passes from the mouth to gullet.

Stomach: From gullet the food passes to the stomach, the stomach produce some acids and liquid which kills any disease in the food, and reduces the food into simpler things or bites.

Small Intestine:- From the stomach, the food passes to small intestine.

Liver/Pancrease:- produces liquid which helps to complete the digestion in the small intestine

Large Intestine:- It collects the undigested food and send it to anus.

Anus:- Undigested food leaves the body through the anus.

QUESTION: Name some organ of digestion you know

ENDTEXT

@23,4 TO 23,60

wait

@9,1 clear to 22,60

TEXT

- QUESTIONS: (1) Briefly write the process of digestion
(2) Write different organs of digestion you know
(3) State the function of each organ

Make sure you answer the above questions correctly.

ENDTEXT

@23,4 TO 23,60

wait

DO DIGEST

return

PROCEDURE LESTWO2

CLEAR

@2,16 SAY "DIGESTIVE SYSTEM"

@3,16 SAY "*****"

@4,4 TO 4,60

TEXT

SUBJECT: Intergrated Science

TOPIC: Process of Digestion

Digestion starts from the mouth, the food is being chewed in the mouth by the teeth, the saliva mixed with the food and makes it easy to swallow, the food now passes from the mouth to the gullet, from there to the stomach where it stays for some time for the stomach to produce acids and liquids which kills any disease or germ that may be in the food. The food is reduced into simpler particles and passes to small intestine where juice (liquid) is produced by the liver and pancreas which helps to complete the breaking down of the food to texture that the body will be able to absorb and make use of it. The undigested food will then move to large intestine and to anus where it leaves the body.

ENDTEXT

@23,4 TO 23,60

wait

DO DIGEST

return