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EFFECTIVENESS OF COMPUTER AS INDIVIDUALIZED INSTRUCTIONAL METHOD IN EDUCATION; A STUDY OF EKWUSIGO

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Abstract
This study examined the effectiveness of computer as individualized instructional method in Education in Ekwusigo L.G.A, Anambra State. A survey research design was used to select respondents for the study. A total two hundred (200) copies of questionnaires were distributed to the retrieved. In analyzing the two hypotheses stated for the study, the data collected were analyzed using percentages and Chi-square. The findings revealed that; there is no significant difference on the availability of computers and facilities for individualized instruction, there is significant difference between the achievement of students taught with individualized instruction and those taught with individualized instruction. Thus based on the the findings, the following recommendations were made. The government or the secondary to provide the necessary facilities, needed for individualized instruction. The administrative bodies should try in the aspect of employing qualified teachers and to be able to pay and retain them. The qualified or experience teachers employees should try as often as possible to be attending seminars, workshops and conference in other to learn and improve in their fields.

Introduction

The primary reason for this study is the need to provide efficient individualized education that fit the leaning need of the students. There are six basic reasons why computers are valuable instructional media for individualized teaching, they can be used in individualized or group instruction, provide immediate feedback and reinforcement to student, collect and analyze student's performance data, flexible in terms of levels of instruction and type of child-computer interactions available, allow self-paced instruction and allow errorless practice.

Computer tend to be essentially motivating because they can provide immediate reinforcement, allow the child to work as slowly as desired, can be set up in a game format or format that does not become boring, and provide a means of errorless learning . It can also provide social reinforcement. The real strength of the computer, however is the ability to interact individually with students and immediately respond to them based on their input. Evaluation of students performance data with the computer can be done utilizing standardized test or work samples or through observable measure.

Secondly, teachers must decide if the child needs to master knowledge or skills already acquired. Computer can utilize drill and practice programs to assist the child in attainment of these skills and knowledge. Flexibility in form of output and input can be provided by the computer. In pacing, instructors to the individual learner, needs to allow as much as the student needs to master a skill. Practice particularly errorless

practice, is important because some students do not attain levels as quickly as most students do. Combining practice with appropriately passed instruction is also important. Utility of computer in individually paced instruction is based on two characteristics of good teaching: The ability of computer to provided immediate performance feedback to students and also learners, and collects performance data and utilize that information to make pre-determined instructional decisions. Students differ in any ways to the extent that teachers find it difficult to meet the individual needs of each student with the time mapped out for the teaching. Some of the students are slow learners. They find it difficult to learn and retain what is being taught to them by the teachers. Another problem is that there is no availability of computers and facilities for effective uses for teaching the students and there are no trained and qualified teachers capable of teaching the student.

Individualized Instruction

Individualized instruction is an instructional method that personalizes instruction to the needs and learning style of the learner. This is done by varying the pace of instruction, the method of learning employed instruction employed and the content to be learned. Most of the times it is accomplished within the context of a large group through the use of high quality instructional material and reduces lecture time. Individualized instruction if not the same as one-on-one instruction or teaching, it is simply the process that meets the needs of each individual learner in the group.

One of the ways individualized instruction tries to meet the needs of the learner is varying the pace of instruction. By allowing learners to progress through content at their own pace, more knowledge is retained and less time is wasted. Individual who can grasp concept quickly are able to move on, while those who need more time to understand can take as much time as they need without pressure to match the pace of the group. This means that learners are at different levels in different subjects as well.

Another way to personalize instruction using individualized instruction is through the use of carefully selected instructional materials. Individuals with different learning style may use different materials o study similar content. Those who learn best through listening may use materials with a strong audio component, while visual learners use a more traditional textbook or material with a video component.

Computer-based instruction can be a good way to accomplish this, as it often uses multimedia approach that is useful with a variety of learning styles. Some examples include features that allow text to be learned as well as seen for audio learners and the hear potation of videos for the visual learners. The quality of the instructional materials becomes very important when individualized instruction is being used. Materials need to be of exceptional quality and also explains the content to be learned.

This allow the learner to move at his or her own pace more easily, since he or she does not need to rely as much on explanations from the instructors. It also frees much of the instructor's time from lectures so that he or she will be able to spend most of the time monitoring learner's progress and assisting those who needs it.

Individualized Instruction-Pace, Method, Content, Example of Individualized Instruction.

The improvement of instruction has been a goal of educators as far as the teachings of Greek Philosopher Socrates. Although there are a wide variety of approaches in most cases; Instruction can be characterized by the following tasks, setting objectives, teaching content based on these objectives and evaluating performance. This formula is indeed the most common; however there have been many advocates of alternative approaches. Among the alternative approaches there is a focus on a more individualized approach to instruction, where the tracts of the individual learner are given more consideration. Each approach to individualizing instruction is different, but they all seek to manipulate the three following fundamental variables:

a. Pace: The amount of time given to a student to learn the content.
b. Method: The way that the instruction is structured and managed
c. Content: The material to be learned

PACE: There are two basic extremes when the pace of instruction is considered. The first is when someone other than the student usually a teacher or an instructor, controls the amount of time spent learning the

material. In this case specific due data are defined before instruction begins. This is currently the predominant model in most educational systems. The opposite extreme would be if the learner had exclusive control over the pace of instruction without a time limit. Between these two extremes are situations where control of pace of instruction is shared or negotiated, not necessarily equal, by the teachers and learners.

Method: As theories of learning and instruction develop and mature, more and more consideration is given the way in which learning occurs. In an attempt to account for way the student learn, instructors may apply a combination of theories and principles in preparing instruction. This can influence whether instruction is designed for one homogenous group or is flexible, in anticipation of individual differences among learners. In the majority of cases, instruction is designed for the average learner, and is customized ad-hoc by the teacher or instructor as needed once instruction begins. This type of instruction, although it does give some consideration to individual difference among learners during instruction, does not fall into the typically accepted definition of individualized instruction. For instruction to be considered, the instruction is usually designed to account for specific learner characteristics. This could include alternative instructional method for students with different background and learning styles.

To help clarify this point, the instructional method used can be considered in terms of extremes. In the first extreme, one instructional method is used for everyone, in the second extreme a specific instructional method is used for each individual. Between these extremes lies the situation where students are arranged into groups according to their characteristics. These groups can vary in size and the instructional method is tailored to each group.

Content: perhaps the least frequently modified component is the actual learning content. However, it is possible to vary the content taught to different learners or groups of learners. Both "tracking" and "enrichment" are examples of customizing instructional content. A renewed movement towards learner centered principles in education has given this component more consideration in the 1990's. It has become possible to find examples of instructional setting in which students define their own content and pursue learning based on their own interest.

In most cases, however this opportunity is limited to high achieving students. In terms of extremes content can be uniform for everyone or unique to each individual. Between these extremes lie cases where the content can be varied, but only within a predefined range. The range of activities available to the learner is an indication of how individualized the content is in instructional setting.

Examples of Individualized Instruction

There are many examples of instructional approaches that have modified some of all of these three components. In all of these examples, the goal was to improve the instructional experience for the individual learner. Some of the most historically notable approaches are discussed below. Within each example both the benefits and criticism of each approach e discussed.

Introduced in1964 by Fred Keller, the personalized system of instruction or the Keller plan is perhaps one of the first comprehensives systems of individualized instruction. Keller based this system on ten accepted educational principles. (Mcgaw, P.4)

1 .Active responding
2 Positive condition and consequences
3 Specification of objectives
4 Organization of material
5 Mastery before advancement
6 Evaluation/ objectives congruence
7 Frequent evaluation
8 Immediate feedback
9 Self pacing
10 Personalization

None of these ten principles should be considered unique, s they all can be easily found in other traditional educational settings. Rather, it is components of the Keller plan-based on these ten principles-that makes the Keller plan some what different, self-pacing unit mastery student tutors, optional motivational lectures and

learning from written materials. It is the first component, Self-pacing, that is the most obvious attempt at individualizing the instruction, from the second component, Unit Mastery, it can be seen that the content does not vary, as the unit content is fixed. To illustrate the static nature of the content, Mke Naumes described the basic design of a course using Kellers personalized system of instruction. The last three components indicate that the method of instruction does vary slightly from individual to individual. Although all students learn from written materials and students tutors the motivational lecturers are optional. Making these lectures optional does constitute some flexibility in terms of instructional method. Fundamentally, it is self pacing that more or less stands alone as the individualized component of this instructional system.

How Computer Works

For most computers, all information that enters into memory is stored in binary form. This means that all numbers, letters and symbols are expressed in terms of combinations of ones and zeros. The reason for this apparently strange future of computer becomes clearer when we investigate the precise way that abstract quantities, such as the number eleven, could be physically represented by humans as opposed to an electronic device. We use a number system with ten different symbols (0 through 9) in which each symbol has a particular value depending on its position. For example, in the number "11" the first "1" has a value of ten and the second "1" has a value of one; so that the number "11" means"1" ten plus "1" one. Each position from right to left in our number has a value of ten times greater than the previous position so that or numbers are made up of ones, tens, hundreds, thousands, etc are all powers of ten, our number system is obviously based on tens and is called a base 10 system.

How Computer Is Used In Education Today

Computer has been used in education for years. However, before the advent of cheap and powerful micro-computers, many educational applications were administration (e.g. payroll, attendance, record keeping, class scheduling) were performed in a mini or maxi computer located in a centralized computer centre and staffed by data processing specialist. A number of educators in 1970's developed extensive amount of Computer Assisted Instruction (CAI) software using computer terminal that were connected to remotely located computer. This software provide, among other things drill and practice for students in mathematics computation and in the grammatical and vocabulary knowledge aspects of reading skills.

In Computer Assisted Instruction, the computer is frequently used as, the medium by which traditional drill and practice or tutorial sessions takes place instead of the teacher or an instructional aid administering or supervising the instructional session,, the students works individually with a computer program, which presents materials reinforces key concepts and ask questions of the student to test his or her knowledge. This instructional situation is often little different from that used in the past except that a computer program is now working with the students on a individual basis rather than a teacher directing a workbook exercise for a class.

Instructional computer software that presents opportunities for students to learn problem solving/skills in a interesting format, and which avoids an exclusive focus of lower level cognitive skills can offer much that typical drill and practice programs or workbook exercise cannot. Software whose graphs are meaningful and interesting not just flashy and ultimately boring, can enhance students understanding in many areas of instruction in ways traditional techniques might not be able to accomplish.

Simulations also represent a category of computer assisted instruction that can offer instructional experience that are more than business, a mathematical description of a system 9 e.g. the functioning of a city, which the students can test and experiment with to see if the situation were real. It is also possible to use the computer as a means of demonstration selected concepts or procedures especially when teaching of physical science, biological science, mathematics, which might otherwise require expensive laboratory equipment. E.g. demonstrating of chemical reaction that might be ordinary impossible to demonstrates (atomic reaction). In this case, the computer is being used for the same purpose as blackboard diagrams, overhead transparencies or filmstrip with sound. However, even a modest demonstration of an appropriate concept by means of well-designed computer software probably would be more reliable and more instructionally rewarding than natural or traditional classroom presentation techniques.

In summary, Computer Assister Instruction (CAI) potentially can provide learning experience for students that cannot be provided cost effectively using more traditional technique computer managed instruction (191) a second category of well-established educational computer uses, as also been moved from large computer to microcomputer since 1970's. The typical 191 program offer a complete system for keeping records on student's attainments of instructional objectives, including diagnostic statement and summaries of each child's performance. Many of these systems are developed by publisher to accompany a textbook series. Some score is child's test as he or she is taking the test presenting immediate feedback to the students and to the teacher.

Comparism of Individual and Group Instructions

According to Abeson and Weintraub (197) state that individualization means that the educational program must be addressed to the needs of a single child rather than a class or group of children. Children generally learn regardless of the types of instruction provided by the teacher, while handicapped children are usually deviated learners and end up in special placements because they cannot perform in a regular education setting. Handicapped learners also tends to be heterogeneous in their learning problems they have and the levels of curriculum at which they are functioning are usually quite divers across a class room of children at similar ages. It is this adversity that required the special education teacher to systematically provide instruction, teachers instruction a time must be efficiently used, grouping children who have similar needs together, while identifying their needs require one –to-one instruction.

Computer have the capacity to assists teachers with many of the tasks designed to provide individualized and small group instruction and free the teacher to work on children's needs that are inappropriate for technology e.g. increasing social interaction for withdrawn children.

Computer Assisted Instruction (CAI)

Most proponents of individualized **instruct** instruction saw the computer as a way to further improve the design and delivery of individualized instruction, now in an electronic environment with the advent of the computer came the potential that as anticipated long before the proliferation of the home computer.

"A modern computer has characteristics that closely parallel those needed in any educational system that wishes to provide highly individualized instruction". He also noted the specific benefits that the computer could offer: It has very large memory can be used to store instructional content material or to generate such material.

The computer can perform complex analyses of student responses. The computer can make decisions based on the assessments of student's performance, matching resources to individual student's needs.

"Learning is in control of some unknown source that determines almost all aspects of the interactive process. To learn, one must suspend all normal forms of interaction and engage only in those called for by the program. Learning is an isolated activity to be carried on primarily in a one-on-one interaction with the computer. Normal inter-human dialogue is to be suspended while learning with the computer. Learning involves understanding how the program expects one to behave and adapting one's behaviors accordingly. One must suspend idiosyncratic behavior. Learning is linear, step-by-step process. In learning from the computer, one must suspend creative insights, intuitions, cognitive heaps and other non-linear mental phenomena".

Olds (1985) even offered some solutions to these problems, indicating that "time on line needs to be mixed with plenty of opportunities for human interaction" and that computer should allow people to "jump around with the program situation".

CAI becomes the forerunner in individualized instruction during the 1980's and early 1990's as the home computer became more powerful and less expensive. The changes that the computer environment helped to make were predominantly a change in the delivery mechanism of individualized instruction, rather than a fundamental change in purpose or method. In a sense, the computer especially the home computer offers a convenience was accelerated with the proliferation of the internet in the late 1990's, starting as an extension

of computer based instruction, online education became increasingly popular and eventually began to supplant CAI as the predominant form of individualized instruction.

Reinforcement and Student Feedback

Computer tends to be intrinsically motivating because they can provide immediate reinforcement, allow the child to work as rapidly or slowly as desired, can set up in a game format or format that does not became boring and provide a means of errorless learning . Errorless learning and ease or editing allow a child to correct work and produces a "learn" product. Computer can also be programmed to provide the student with personalized reinforcement, such as "that's a good job Frank", as well as to be programmed to call the teacher's attention to good work so that additional social reinforcement can be provided. The teaching environment can make it difficult for teachers to be consistent in the application of appropriate rewards for student performance. Computer is absolutely consisted with its ability to reward performance and can be programmed to provide that reinforcement base on the tested principles of behavior modification. Teachers are relieved from some of the equipment of providing constant correction and reinforcement that the computer can provide and can utilize the power of intermittent social reinforcement with the child or student. It remains important, though to maintain the human element of praise even when a child is working on a computer.

The real strength of a computer is the ability to interact individually with the students and immediately responds to them based on their input. As such, it provides the teacher with an additional medium, which enables the student to engage in a interactive learning environment without requiring one-on-one instruction from the teachers or aids. One of the primary reasons for one-on-one instruction is to provide errorless learning experiences, if errors are ignored, they tend to be reinforced and this is why monitoring students' responses is important. (Sloan, Buckholdt, Ienson and Crandallm, 79) Computer can be programmed to monitor and if desirable, brand to remedial instruction or allow the child to respond again. They can also be programmed to call teacher if the child is unable to get the correct response within the set mastery criterion.

Issues on Individualized Instruction

Individualized instruction comes in many forms all of which seek to improve instruction in some ways. As can be seen in the example given, alternative instructional approaches most often vary the pace and method of instruction, but the content itself. The content is usually consistent with traditional instruction, although if may be segmented differently.

Other benefits are also significant, but not as consistent among approaches. Each approach has its own set of prescriptions and each has been heavily criticized. Yet that is to be expected even now, individualized instruction in its various forms is still a relatively recent innovation and will remain under scrutiny until several criticism are accounted for.

Perhaps, the most profound criticism comes in the article "Individualization, the hidden agenda" by Ronald T. Hyman (1973). He was concerned with the latent functions of individualization generally. In the push for individualization, to most common approach is to divide the subject matter up into segment and teach it at a self-taught level, but Hyman learns that "segmented Junk is still junk", these are no concern for what really is the problem and that is his subject matter itself. He claims that individualized instruction typically does not alter the subject matter based on the needs of the students. Without doing this, there is a compromise of individualized instruction.

In summary, individualized instruction has the potential to improve instruction by varying the pace of instruction, the instructional method and rage content. Most approaches allow for self-pacing, yet variation in method and content is race and when it does occurs, is usually very limited. As of the early twenty-first century, there are no indications that this trend will change in the immediate future, although as the bases in this area increase, major improvement are certain to come.

Conclusion

The result of the research shows the extent of the Effectiveness of Computer as Individualized Instructional Method in Education in Secondary Schools with much emphasis in Ekwusigo L.G.A of Anambra State. In

order to achieve the noble aims or objectives of this study, enough and good computers and other facilities should be provided by the administrative bodies, for effective teaching and learning by the teachers and students.

Qualified and experience teachers should be employed and also undergo an intensive training, to be able to utilize and make use of the computers and facilities provided or available for the achievement of the objectives of the study. With this, our country will advance effectively in the aspect of using individualized instructions or instructional materials and thereby improve the quality of life of an average student and their rate of intelligence.

Recommendations. The author recommends the following steps to be implemented:

- The governments or the stakeholders, sole proprietors, in-charge of these secondary schools are to help in the finding or in financial aspect, to provide the necessary facilities needed for individualized instruction.
- The administrative bodies should try in the aspect of employing qualified teachers and to be able to pay them well, so as to retain them.
- The qualified or experience teachers employed, should try as often as possible to be attending seminars, workshops and conferences, in other to learn more and improve in their fields.

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