THE LEGAL INVESTIGATION OF EFFECTIVENESS IN LEARNING MEDIA ON THE COGNITIVE ASPECTS OF STUDENTS WITH SPECIAL NEEDS

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ABSTRACT

The purpose of this study was to investigate the effect that using instructional content built on Android had on the cognitive capabilities of students who were deaf. This study makes use of a quantitative and pre-experimental approach to the design of its research. A one-group pre-post-test design is going to be used for the study approach. The pool of 8 kids served as the source for the selection for the saturated sample. For the purpose of data collecting, this study made use of pre- and post-test questions; for the purpose of data analysis, the normality test, the homogeneity test, and the paired sample T-test were used. The research indicated that there was a statistically significant improvement between the pre-test and post-test averages, with the pre-test average standing at 31.25 and the post-test average standing at 46.25 respectively. That is to say, people's performance on the post-test, on average, was higher than their performance on the pre-test. This is further supported by the findings of the hypothesis test, which indicated a significance level (two-tailed) of 0.005, thereby rejecting H0 and accepting Ha, which indicates that Android-based learning media has a beneficial impact on the mental capabilities of deaf students.

Keywords: Legal Investigation, Special Needs, Cognition.

INTRODUCTION

The kind of schooling that is being debated here is referred to as special education. The issue of special education is now receiving significant attention from a wide variety of political forces. Children who have special requirements may access an inclusive education in a variety of public schools thanks to the availability of this important service (Hardy & Woodcock, 2015). Because there are now more children than there have ever been who have special needs, governmental agencies realize that this problem is a top priority and must be given particular attention. This is because there are now more children than there have ever been who have special needs. It is possible to achieve this goal in a variety of ways, one of which is by expanding the number of special schools that are spread out over the country and by providing educational facilities.

It is expected that teachers would be able to be more imaginative in their delivery of information to children who have special requirements, one of which is deaf children, as a result of the technological improvements that are now available and the many facilities that are supplied by the government. According to Bell et al. (2016) deaf students are students whose hearing senses have impairments, which means they cannot hear entirely, which will have a detrimental effect on their educational development as a consequence of this. Deaf students are referred to as "*students with hearing impairments*". Pupils that have trouble hearing are also referred to as deaf students.

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It is on the basis of this that the implementation of the educational process for children who are deaf is carried out specifically so that students may more readily comprehend the subject matter, and it is anticipated that students will be able to eliminate communication barriers between instructors and students. When attempting to communicate with hearing children, one must take a completely different approach than when attempting to communicate with deaf children. The whole process of education may be made more effective by using tools like the many different types of learning material that are available (Mishra et al., 2020). This has become something that attracts public attention to take advantage of the rapid development of information and communication technology, specifically by developing learning media that is not only for print media but has penetrated Android-based media. This has become something that attracts public attention to take advantage of the rapid development of information and communication technology. To be more specific, this is something that captures the attention of the general public in order to capitalize on the lightning-fast advancement of information and communication technologies. The mobile phone, in its capacity as a medium for communication and information, is continuing to progress, both in terms of the amount of complexity it has and the innovations that it gives rise to (Teece, 2018).

In this era of the 4.0 Industrial Revolution, it is highly recommended that creative methods to the use of digital technology be developed and put into effect across all sectors, including the field of education. Greenhow et al. (2022) stated the creation of applications using various forms of technology that are geared toward assisting students with learning difficulties in their academic endeavors is one potential answer to the problems raised here. As a result, now that there is learning media that is based on Android, teachers need to be able to use it in the classroom so that it may have a positive influence on the learning outcomes of students in terms of the cognitive, emotional, and psychomotor aspects of learning.

Deaf children have normal cognitive capacity, with the exclusion of specific notions that are gained via language experience (Richardson et al., 2020). Children who are deaf have normal cognitive ability. If a deaf kid is less able to complete the intellectual activities that he has to because the teaching service is less effective or less engaging, then the child will have a more difficult time of it. In spite of this, Laksono (2021) states there are still some teachers who have not adopted or made use of Android-based learning media as a kind of instructional media for children with special needs. Because the instructor depended only on images from the media, the students' academic performance, particularly in terms of their cognitive growth, suffered as a consequence. In addition, the teacher will seldom examine the competence of the cognitive aspects that pupils have about the topic being studied. This is as a result of the fact that children who have special needs are given more time to comprehend the significance of these questions, which leads to the majority of learning outcomes being focused only on the psychomotor components. The reason for this is as a result of the fact that children who have special needs are given more time to comprehend the significance of these questions.

Problem Statement

However, based on what we have investigated, there are still some teachers who have not taken advantage of or made use of android as a learning medium. Instead, the instructor relies only on media images, which causes the learning outcomes of deaf students to be subpar in terms of cognitive components once the pretest has been given. This study was carried out with the objective of identifying whether or not learning media based on Android are helpful in enhancing the cognitive capacities of students who are deaf. In this specific investigation, a combination of

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qualitative and quantitative research approaches, as well as pre-experimental research methods are used.

Objective of the Study

Since this is the case, the concern of this study is to shed light on the application of educational technology with the hopes of enhancing the cognitive education results for students with special needs. The purpose of this research was to examine the impact of Android-based learning media on the cognitive characteristics of students with special needs, as well as the impact of students' cognitive features on the effectiveness of using such media.

LITERATURE REVIEW

Android Based Learning

Learning that is "*based on Android*" makes use of Android-powered mobile devices such smartphones and tablets as a vehicle for the transmission of information and the development of skills. It is possible to employ a variety of different types of multimedia, including apps, games, videos, and quizzes. According to Zou et al. (2020) android smartphones enhance students' mobility and convenience in the classroom by making it possible for them to access course materials regardless of where they are. In addition, the use of mobile technology in the classroom provides for a more interactive and exciting learning environment, which may increase students' levels of interest and motivation (Sun & Hsieh, 2018). There is a plethora of educational software available on the Android market, such as Khan Academy, Coursera, and Udemy, amongst others. These programs may provide access to a wide variety of lessons and guides covering subjects such as mathematics, science, history, and the study of languages.

According to Hew et al. (2015) many hypotheses and explanations have been proposed in order to explain for the effectiveness of learning via the use of mobile applications. One of the most well-known of these theories is known as "*contextual interference*," and it proposes that students will have more success in their academic endeavors if they are exposed to a wide range of subjects and activities. If pupils are made familiar with a variety of challenging subject matter, the theory goes; they will learn more effectively and will be better equipped to use what they've learned when confronted with unfamiliar circumstances.

The concept that individuals learn best when they are motivated by their own interests and ideals is at the core of something called "*self-determination theory*," which is equally relevant to learning that is accomplished via the use of mobile apps. It is possible to develop mobile apps that provide content that is not only specific to each student but also fascinating to that person in order to attract their attention (Kazhan et al., 2020).

The "*constructivist ideology*" is also an important factor in learning via the use of mobile applications (Hasan et al., 2021). It suggests that students construct their own interpretations of the course content by drawing from their personal experiences and the prior information they have acquired. Students may be encouraged to construct their own understanding of the content via the use of exploratory and interactive tasks that can be provided to them through mobile apps that can be used to assist them in this process.

Last but not least, there is a theory known as the "*gamification hypothesis*," which asserts that the incorporation of elements resembling games in educational mobile apps might increase students' levels of interest and engagement. That may be accomplished by include elements like

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as points, badges, and leaderboards, which also help to cultivate a spirit of healthy competition and continual forward movement (Veltsos, 2017).

According to these schools of thought, mobile app-based education is at its most effective when it is individualized for each specific student, when it is engaging and exciting, and when it builds on the students' prior experiences and areas of particular interest (Hakkinen et al., 2017).

Cognitive Aspect of Students with Special Needs

Students' cognitive abilities include their capacity to receive new knowledge, to process that information, and to remember it at a later time (Kwan & Wong, 2015). Learning disorders, attention deficit hyperactivity disorder (also known as ADHD), autism spectrum disorder (often known as ASD), and intellectual disability are just a few examples of conditions that may have an impact on one's cognitive capabilities.

Riccomini et al. (2015) sated reading, writing, and arithmetic is all subject areas that, for people who have difficulties with their learning, may provide particularly difficult tasks. It's possible that they have issues with phonological processing, which limits their vocabulary, or working memory, which limits the amount of knowledge they can have in their minds at one time. Both of these problems make it harder for them to communicate. The combination of these two challenges makes it more challenging for them to pick up new vocabulary.

Students who have ADHD may have trouble concentrating and keeping their impulses under control, which may make it difficult for them to remain on task and complete their schoolwork. If they struggle with their working memory and organization, it's possible that this will also affect their capacity to plan and carry out tasks (Cowan, 2017). This might be a problem for them.

A student's capacity to read and respond correctly to the signals and behaviors shown by others in a range of social circumstances is referred to as their "*social cognition*," and the word "*social cognition*" is a term derived from the phrase "*social cognition*." Barriers to language and communication may make it more difficult for a person to convey their ideas and thoughts to others, as well as for others around them to understand what the person is saying. According to Siberski et al. (2015) students who have intellectual disabilities may have challenges in a range of cognitive areas, including memory, the capacity to solve problems, and abstract thinking, among other cognitive abilities. In addition to this, individuals could have difficulty recalling knowledge and adjusting to unfamiliar situations.

In general, individuals who have special needs may gain advantages from individualized academic support, in addition to other forms of academic modification, in order to assist them in reaching their full intellectual potential. It is possible to do this in order to aid them in reaching their full intellectual potential as quickly as they possibly may. It is feasible to adopt tactics such as simplifying the task at hand, offering visual support, and making use of different types of assistive technology (Sahu et al., 2021). These options are all available. In addition, while formulating educational and support strategies for children with special needs, it is of the utmost importance to keep in mind the unique skill set and assortment of interests that each child brings to the table.

Methods

Because of the kind of problems that are being looked at, this investigation makes use of a quantitative approach to its technique. The use of quantitative research to investigate how the

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influence of a number of different elements is one method for putting ideas to the test. Quantification of these variables is required in order to conduct an analysis of numerical data using statistical techniques. The fact that the research did not include a control group demonstrates that the pre-experimental methodology was used to carry it out. We conducted this study using a one-group pretest-posttest design, which involves comparing data both before and after treatment in order to make conclusions on the efficiency of the intervention. For the purpose of this study, a technique known as "*purposive sampling*" was applied. In this approach, a representative sample was drawn from the whole population. This is a technique that is often followed when there are less than 30 persons in a certain location. As a result, in this study, all eight participants were from the population of children who have special requirements, and they were chosen at random. In order to examine the data obtained from this inquiry, the Paired Sample t-Test was used since it compares two measurements that were obtained from the same subject. In order to test the hypotheses, we will compare the means (mean) of two matched samples obtained from the same population both pre-test and post-test.

RESULTS

Normality Test

Table 1
NORMALITY TEST

Shapiro-Wilk	P-value
Pre-test	0.2
Post-Test	0.2

Table 1 was determined that a value of 0.200>0.05 was substantially different from the significance level of 0.05, which showed that the normality test was successful. As a result, one may get the understanding that the results of the preliminary test followed a normal distribution. On the post-test, the normalcy test discovered a significant result of 0.200>0.05, although the results of the normality test on the pre-test revealed no significant changes. The inference that the data on the post-tests also have a normal distribution is one that may be drawn from the available evidence. It is possible to draw the conclusion that the distribution of the data obtained from the pre-test as well as the post-test is normally distributed, which means that it satisfies the conditions for the paired simple t-test based on the results of the normality test that was carried out. The results of the normality test that was carried out can be found in the table that can be found here.

Homogeneity Test

Table 2
HOMOGENEITY TEST

	Mean Square
Pre-test & Post-test	0.909

The homogeneity test produced a significance value that was more than the required 0.05 level to be considered statistically significant. Table 2 result was 0.909. Because of this, one may reach the conclusion that the data are homogeneous, which is another name for having the same value for each of the variables.

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Paired Sample T-Test

Table 3
PAIRED SAMPLE t TEST

	N	Mean
Pre-test	8	31.25
Post-test	8	46.25

Table 3 results of a Paired Samples T-Test indicate that the average score on the pre-test was 31.25, but the average score on the post-test was 46.25. It is known that this difference exists. This suggests that the average score on the posttest is higher than it was on the test that came before it (the pretest). Because of this, one may get the conclusion that there is, on average, a difference between the posttest and the pretest as a consequence of what happened. The discrepancy or disparity that was discovered works out to be comparable to the number 15. The hypothesis test, which uses the presence of a significant value as the condition for testing, corroborates this finding as well. To be more specific, if the value of Sig. (2-tailed) is lower than 0.05, then the hypothesis H0 is not supported, but the hypothesis Ha is. If the value of Sig. (2-tailed) is larger than 0.05, then the hypothesis H0 is accepted, whereas the hypothesis Ha is rejected. This is because the higher value indicates a more significant finding.

DISCUSSION

The basic articulation of the topic that is offered here brings up the cognitive features of pupils as one of the considerations. It was stated, on the basis of the findings of interviews with the class teacher, that there are two types of skills in the cognitive aspects of deaf kids in grade 3, namely low or below average (subnormal) and medium or average. This was said on the basis of the findings of the interviews with the class teacher. As a result of the results of the interviews, we came to this conclusion (average). Students who are deaf may struggle with hearing issues, which can result in a limited vocabulary (Crump & Hamerdinger, 2017). As a result, these students often have a difficult time understanding the meaning of the questions that are being asked. Exams in the form of questions are used to gather this information, which is then based on the learning outcomes achieved from those exams.

The teacher expressed the exact same feeling in the same way as you do now (Van der Heijden et al., 2015). The results of the interview with the instructor indicated that the cognitive capacities of deaf pupils in grade 3 were categorized as being poor, especially in the area of learning for reading. This occurred as a result of the fact that these pupils struggled to understand the significance of the questions that were presented to them. As a direct result of this, they reacted to the questions without first reading the questions, which resulted in poor learning outcomes for the deaf students in terms of the cognitive component.

Children who have very particular needs might potentially gain advantages in a variety of areas by obtaining their education via a platform that is built on Android. It is possible that it will give these children with new options and make it easier for them to acquire instructional resources, both of which would be important benefits. Students who, because of medical conditions or other limitations, have trouble getting to and from school could benefit enormously from receiving their education on Android devices.

Learning on Android devices has the added advantage of being adaptable to the requirements of students who have disabilities. This benefit is not exclusive to students with impairments. This is a big benefit to consider. Children who have trouble speaking or reading

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may benefit greatly from using software and applications that can convert text to voice as well as speech to text. According to Muslimin et al. (2017) the use of multimedia elements into android-based learning, including as films, animations, and interactive games, may make the learning process more dynamic and engaging. This, in turn, may result in students with special needs being more actively involved in the process of learning. In addition, the educational process may be made livelier and more interesting for the student.

There is a possibility that kids who have unique needs might benefit from having their cognitive development assisted by learning that is based on androids. Students who have attention deficit hyperactivity disorder (ADHD) may benefit from learning applications that are built on the android platform and assist them boost their concentration and focus (Powell et al., 2017). In a similar vein, children who have autism spectrum disorder (ASD) may benefit from using apps that mix elements of a game to teach them social cognition and language skills. These programs are intended to help these children acquire these skills.

Android-based learning enables remote monitoring, tracking, and progress reporting, which provides educators and parents with a better understanding of how their children are doing in class. Students who have special needs may benefit from this since it gives greater transparency into their academic achievement.

Learning that is based on Android has the potential to be a beneficial tool for children who have special needs. This is particularly true when it comes to assisting in the growth of children's cognitive capabilities. Android-based education has the potential to be a useful instrument because to its portability, accessibility, and adaptability, among other advantages.

CONCLUSION

Deaf children's intelligence falls on a spectrum from much below-average to just-average to slightly above-average. But because to their hearing difficulties, deaf students' cognitive skills are classified as weak or below average when it comes to learning to pray. This is because of their restricted vocabulary, language, and communication challenges.

A group of deaf students who used android-based learning material showed a 31.25-point boost in their critical thinking skills after using the app. What this means is that, on average, people did better on the posttest than they did on the pretest. We may thus assume that the gaps between the pre- and post-test scores are about average. The sum/difference computation yields the number 15. Consequently, with a Sig. (2-tailed) of 0.005 0.05, Ha is accepted whereas H0 is denied. This indicates that the use of Android-based educational content has a significant positive effect on the cognitive components of deaf students. But even so, the outcomes were not satisfactory.

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