

# Design and Development of interactive E-Learning framework for Special need students

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## ABSTRACT

Education is an ability that every person should have. Traditional classroom instruction or online instruction are also viable alternatives. Education has the power to change a person's life by enhancing their abilities, attitudes, personalities, and awareness. Due to the global pandemic, schooling for children is extremely challenging and critical in today's world (COVID-19). For the student, the educational approach has changed to include online learning. Since education is the basis for one's future, everyone deserves a fair chance to learn. Normal students are being taught online due to the global pandemic, but students with special needs aren't getting enough benefits due to a lack of technical innovation in educating the children with special needs. Many organizations lack a special framework for special education dependent on various forms of disabilities. As a result, there is no structure or curriculum in place for children with special needs to research using an interactive e-learning platform, particularly one that is available online. The research will produce studies and results that support the creation of an interactive e-learning platform designed specifically for students with special needs to study in any situation. A survey was conducted, and more than 75 people responded positively to the research. As a result, the researchers have made several suggestions for better e-learning. Finally, the authors have made some suggestions for better e-learning options in education technology that could be tailored especially for these students with special needs.

Keywords: Education Technology, Special need education, Online learning during COVID-19 pandemic, Interactive E-Learning

## **Introduction**

Education plays an imperative part in everyone's life. It could be a weapon to move forward and change one's life. Instruction makes a difference to improve one's abilities, state of mind, identity, and information within the right heading. The children of nowadays are prepared to gotten to be grown-up citizens for tomorrow. In this way, teaching the children is exceptionally vital and it's pivotal. A shift from bookish information to life information has resulted in a number of changes in a child's life, ranging from how they deal with their circumstances to how they interact with other children. The educational institution provides a platform for a child to express themselves rationally, physically, and frankly. As training has a certain amount of influence on a child. Special way of teaching and learning for children with uncommon needs is really needed in the current scenario of online mode of education. Uncommon require children are those who require outside bolster to live a typical life like an ordinary human being. Numerous instructive teachers have been maintaining a strategic distance from and ignoring extraordinary needs children considering they are exceptionally troublesome to oversee. These children are inquired to connect an uncommon school. Where a few institutions don't know how to educate or handle these kids. Instructive could be a right everyone merits to induce and it needs to be given similarly despite one's colors, inability, and sexual orientation. This extend gets it the values of instruction for the uncommon need's children. The research will develop a well-defined system in the field of education for children with special needs. It will be a place where learning will be intuitive. There have been several testing in smart learning for children with special disabilities, such as tap to talk and touch to talk. According to Megan Walsh (Walsh, 2018), they must be treated like any other youngster. Children with extraordinary needs are also necessary to have a place in modern society. According to studies, children with special needs have feelings that they are unable to express verbally because of their disability, making them feel weaker about themselves. (Ozonoff et al., 1990)

## The rationale for the research

This study aims to have an impact on society and raise awareness about special needs children among the general public. Everyone needs education, and it is a requirement for everyone. These children with special needs should have the same rights as other children and should get appropriate teaching.

This study aims to have an impact on society and raise awareness about special needs children among the general public. Everyone needs education, and it is a requirement for everyone. These children with special needs should have the same rights as other children and should get appropriate teaching. During the dissemination of COVID-19, special-needs children should be given the opportunity to think about the internet as well. Ordinary kids have a lot of options for learning, but special-needs kids don't. Children who are extraordinary require a unique approach to education, but they must be treated like regular children. (Hornby, 2015)

## Literature Review

According to Brahm Norwich (NORWICH and LEWIS 2007), The fundamental instructing is similar compared to ordinary and extraordinary children. The viewpoints such as educator information, educational programs, and instructional method methodology are interconnected to a certain degree. American educational programs center to begin with on how the teaching is taken put. And after that furthermore, it centers on the “what” portion of the educating. Educational programs influence all the angles of education and school. The educational programs choose which lesson has got to be instructed when to how the seat has got to be kept in a classroom.

Common learners, specific & outstanding learners, and unique & individual learners are the three categories of learners. Students fall into one of these groups, which can be mixed and matched (case: particular & person learners). The majority of the teaching modules focus on how effectively the understudy thinks.

Many students have struggled in their academics as a result of various challenges that have had a significant impact on them. There is a solution to this problem in cooperation with cognitive and instructional approaches. These are the five processes that are used to make online education easier for everyone. Learning conditions, understudy characters, errands, and overall evaluations are examples of tactics.

Learning or studying well isn't sufficient. These methods are accommodating to construct up one's creative energy and offer assistance to them to examine around themselves by inquiring questions to themselves which comes about informing their future within the right way. Student's instruction can't be just bookish information it needs to be exterior of the box which can eventually offer assistance to the understudies within the future.

The present innovation gives interactive learning to the other side of the world in a single press. Interactive learning gives adaptability to the clients. It gives distinctive modes of learning to the clients which are uncommonly outlined for intelligently learning. The mode is varying media of the different lessons. The moment mode is where the client gets to choose the subject and the framework will give the varying media highlight. The third mode is where the client doesn't get any preparation from the framework. The client fair gets to the varying media records.

Diverse training is used to cover the operations. The keys are also planned in accordance with the instruction. The client obtains literary reference material through the use of the terms "Quickref" and "DESKREF." Clients can type notes about various perspectives on the 'CLIPBOARD.' 'APPLICATION' could refer to a part of a computer program that executes the application without forcing the user to Exit. The project 'AURORA' is a smart environment. The virtual environment is used to help pupils who are particularly introverted. Autistic children demand a controlled and secure setting in which they may be themselves. These virtual circumstances can be transformed into a learning environment in which children may be themselves while yet feeling safe. This allows the parent to monitor the child's behavior and make modifications if necessary. It can take a long time to adjust to this type of setting.

It is very important to consider the usability criteria pertaining to human computer interaction for any teaching and learning environment created for these children, then whether its on digital platform or through hardware. (Al Mahdi et al., 2019)(Naidu et al., 2020)

'Proactive conduct' is a joyful environment where children value themselves and feel energized. This place enables understudies to discover and have fun on their own. This behavior has the potential to cause a lot of change in people. Generalization: A child may appear to have a lot of improvement in one area, but when it comes to general learning, the child is unable to keep up with the regular errands.

## Methodology

The term "mixed method" refers to a combination of two factors. It can be a mix of subjective and quantitative in this scenario. This extension's strategy will be a mix of approaches. This method can be quite useful in a research setting,

broadening the scope of the investigation. (Sandelowski, M., 2000) Furthermore, this method includes a coordinated association with individuals in order to determine their reaction, which strengthens it. Because the data is collected quantitatively, it reflects the individual's belief system, and their voices will be heard in the analysis of the facts. Because it is so adaptive and diverse, this method can be used for any kind of thinking. The quantitative technique will provide a numerical evaluation of people's responses to the question, mostly in terms of rate. Interviews and studies can be used to acquire word information from individuals as part of the subjective technique. (Lund, T, 2012) This technique provides in-depth data on people's perceptions on special-needs children and their education. The enterprise has conducted two interviews with participants from various age groups and cultures as part of the subjective strategy. The comparison looks to be a contrast between two unique individuals. The venture has used a survey of 78 people as part of its quantitative strategy, which shows the percentage of people who agree and disagree with the offered explanation. It includes an open-ended question where anyone who is interested can make a few recommendations.

**Data collection**

To collect data, both quantitative and qualitative methods were used with the informed consent of the participant. Identity of the participants are not collected. Also, interviewees were informed that their identities will not be revealed anywhere during this research.

**Questionnaire**

This survey was made in google shapes and has been dispersed to individuals through WhatsApp. This survey has ten questions counting two open-ended addresses. This study is approximately knowing people's reaction to the interactive E-learning system for uncommon require children. The overview will appear how is the audience's reaction approximately making an unused system which can eventually troublesome the extraordinary require children.

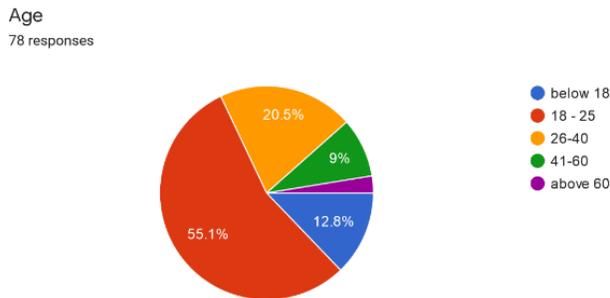


Figure 1. Q1

The study was conveyed to the takes part through WhatsApp. The study has got 78 reactions from the individuals maturing from 15- 60 coming from distinctive foundations, distinctive culture, and diverse leveling of considering.

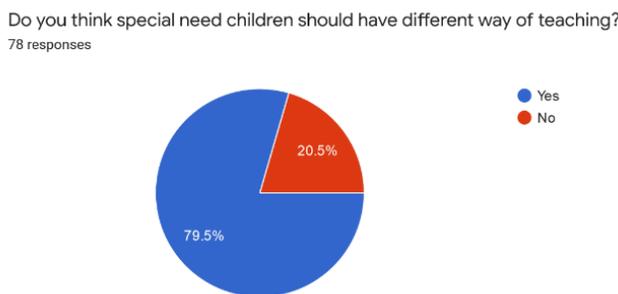


Figure 2. Q2

Nearly 80% of the partakes concurred that there needs to be a diverse way of educating for uncommon require children. Giving a distinctive way of educating can be a weight on the instructors as well as understudies. If this weight makes a difference the understudies at that point it's continuously way better.

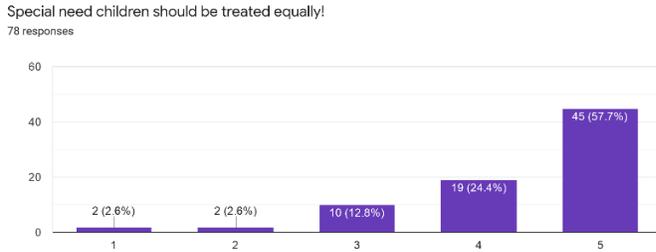


Figure 3. Q3

The result appears that nearly 58% of taking an interest emphatically concur that uncommon require children ought to be treated equally. 24.4% of the partakes concur that they have to be treated equally. And 12.8% are impartial. The result appears that major of the members concur that extraordinary require children have to be treated equally.

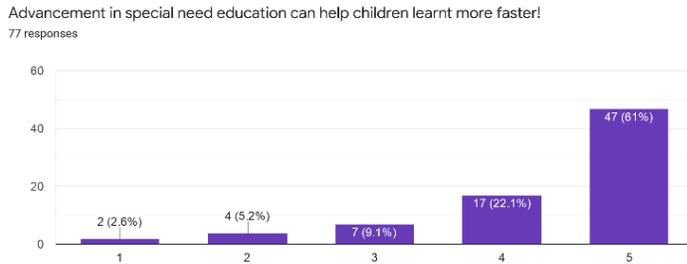


Figure 4. Q2

The reaction of the address appears that 61% of the partakes unequivocally concur that innovation will offer assistance uncommonly require children to memorize speedier than a conventional way. 22.1% concur that innovation will offer assistance to the children to consider. As it were 5.2% oppose this idea and 2.6% emphatically concur. Lion's share of the members concurs that innovation will offer assistance to them. Technology has made a difference for everybody. It'll offer assistance to the children too.

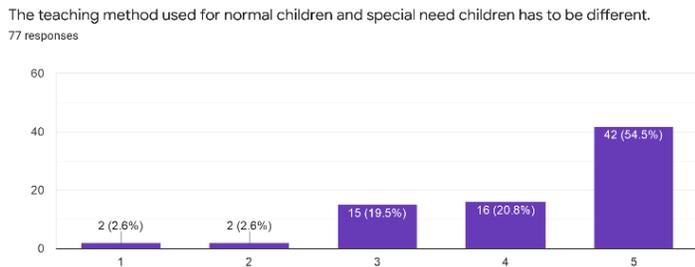


Figure 5. Q2

Special children’s education strategy should be distinctive from the typical children this explanation is emphatically concurred by 54.5% of the members. 20.8% has concurred with the explanation. But 19.5% are unbiased approximately the explanation. And 2.6% oppose this idea and 2.6 unequivocally oppose this idea.

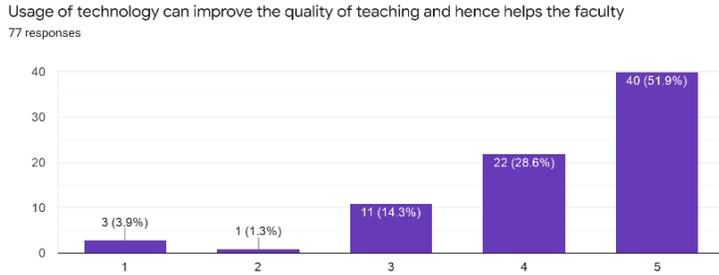


Figure 6. Q6

Half of the partakes (51%) have emphatically concurred that modern innovation can offer assistance to instructors and understudies. 28.6% has concurred with fore same. 14.3% of the partakes are uncertain whether it'll offer assistance or not. In any case, 1.3% of members oppose oppose this idea and 3.9% unequivocally disagree.

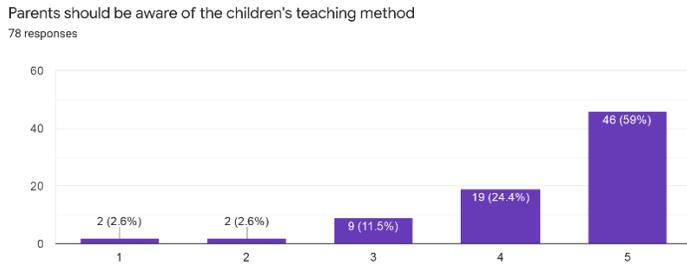


Figure 7. Q7

The result appears that more than half of the partakes unequivocally concur that guardians ought to be mindful of the children’s educating technique. 24.4% concur that guardians ought to be mindful of the same.

Have you come across any applications which are used for special needs children  
77 responses

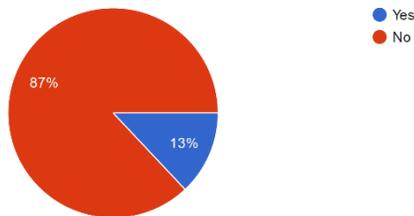


Figure 8. Q8

This chart appears that there's no mindfulness for any modern application presented by the individuals and the takes part aren't mindful of the application indeed it is commonly utilized. 87% of the takes an interest has not thought around any application and 13% knows the title of the application.

*Interview Analysis*

The interview was taken from two diverse people coming from diverse foundations and diverse age groups. The analysis of these interviews shown that there is need of modification in the existing teaching and learning methods in online mode especially for these differently abled students. Special attention must be given to them and students should be contacted on regular basis in online mode. For better results, with informed consent of the parents, if possible, these students could be arranged for counselling with psychological counsellors. Video based counselling will be even better because it will enhance the engagement and counsellors can even see the students directly and interact. For teaching and learning, special strategies should be formed for the lesson planning as well as assessments.

## Findings

The interview was taken from the participants who had distinctive discerning around the innovation, understudies, and instruction. Any innovation improvement which makes a difference for the children can be utilized by the school administration. The concern was that it must be reasonable. The innovation has made a difference for the children and the instructors who are instructing through the application. Participant 1 needed the application which can make the children feel needed and they got to be caught on. Participate 1 needed an innovative progression that is based on logical realities and the strategies must be concurring to the children's inability. This takes an interest wasn't enjoying the thought of utilizing innovation here. Participant 2 needed something interactive which can offer assistance to the children, guardians, and teachers. The innovative headway and instructing strategies got to be told to the guardians to induce speedier comes about from the kids. This takes an interest was a supporter of innovation. Innovation can progress everybody. Overall, each member within the information collection handle had concerns about how innovation is aiming to offer assistance uncommon require children at the same time member think that innovative headway can offer assistance to the instructors as well as uncommon require students which make them learn speedier than the conventional strategy. Extraordinary children got to have a system which is reasonable for their sort of incapacity and which brings out their ability.

## Proposed framework

As seen in Fig. 9 this is a proposed framework for online education during the COVID-19 pandemic for special education.

### *Ministry Guidelines to HEIs for Online Education during Covid19 Pandemic*

The guidelines which are set by the ministry of education are strictly followed by the schools and colleges across the Sultanate of Oman. The spread of COVID-19 has forced the ministry to convert offline classes into an online class. The classes are supposed to be conducted through google meet and the teachers are requested to use WhatsApp as a means of communication to communicate to the parents of a kid. (Times-News service)

### *Institutional strategies and policies*

The educational institutions have come up with different strategies and policies keeping the guidelines of the ministry of education in mind. The policies were structured in a way that is easy for the teachers and the student to follow. One of the top educational institutions of Oman has come up with a policy which is no written exam that is converted into two assignments that carry equal weightage for a semester. The assignment viva is canceled by the educational institution. The entire policy of the institution isn't changed but the policies which require contact with the students are converted into a new policy.

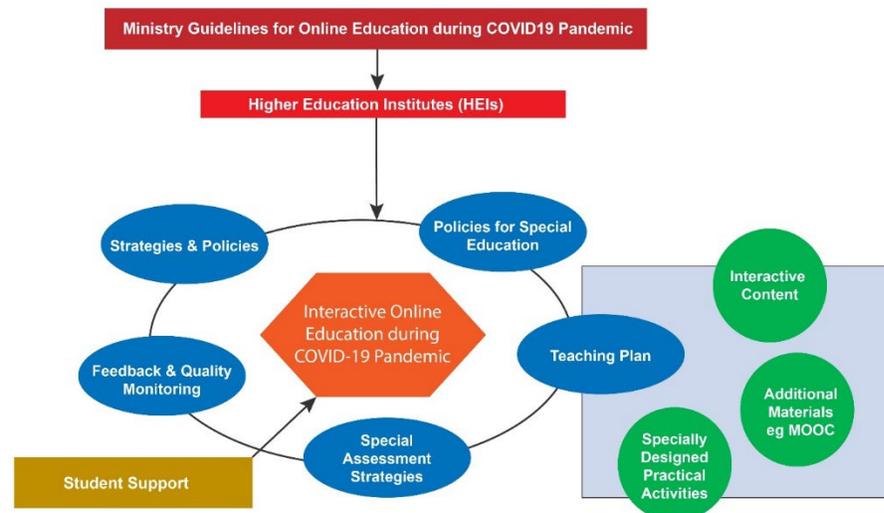


Figure 9. Proposed framework for special need education

### *Policies for special education*

Special education needs special care. The policies for special education can be changed according to the student's ability and disability. The policies are structured according to the student studying in the institution. The higher educational institution in Oman has few policies such as printing question paper in a bigger font for the students who have difficulty in reading. An external writer is provided by the institution in case if the student can't write the exam. These kinds of special cases are treated specially by the educational institution. These policies have come out so that every student gets a chance to be a better person and be educated. Those policies are for offline education when things come to online learning. It's the teachers who are checking on the student's progress on the assignment. The teacher provides additional help or special class for the student for better learning.

### *Teaching plan*

The teaching plan should be a well-defined and well-structured plan. The content of the teaching should have interactive elements such as a weekly quiz. Apart from the syllabus provided by the institution teachers can provide some external study materials or online courses such as (MOOCs). The teaching plan and teaching methods have to be online considering the global pandemic. The plan is structured in such a way that it has minimum hardware usage. Educational institution in Oman provides remote lab access as not many students may not have all the software needed for finishing their assignments, that's the institution allows the student to use the software on the account of the institution.

### *Special assessment strategies*

This stage is coming after the teaching process. In this stage, a teacher comes to know the knowledge which a student has gained by using teaching methods provided by the institution. Various assessment has been given to the students from the syllabus a student has studied to test their knowledge in that particular field.

### *Feedback and Quality monitoring*

Once the teaching and assessments are completed. A student is asked to provide feedback from the teaching strategies provided by the educational institution. The teacher keeps monitoring the progress of the student right from the assessment given and explained till the submission date of the assessment.

### *Student support*

This is a step that is involved in every stage in a student's teaching process. Student gets support from the educational institution by a teacher or by the institution itself. The support provided can be such as providing extra time for the student to submit the assessments when a student is sick.

## Conclusion

Advances in ICT can be valuable to everybody from the children to the instructors. The application has got to be from a trusted source, and it ought to be universally esteemed. The application ought to offer assistance to them find themselves and upgrade their internal ability. It ought to make them feel way better and it ought to move forward their mental state not fair in terms of instruction but too in their conduct. In any case, innovation can be exceptionally useful for the kids, but it should make them feel vital and the innovation ought to treat the way the children got to be treated.

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