INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) INNOVATION IN TEACHING STUDENTS WITH DYSLEXIA

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Abstract

Each teacher's intention is for college students to apprehend and master what they have found and be capable of observing it in situations they want. However, some scholars have issues remembering and retaining what they have discovered. Gaining knowledge of disability is a situation defined as "difficulty in getting to know and learning about a particular mission." Agnosia, dysgraphia, dyscalculia, and dyslexia are examples of gaining knowledge of disabilities that can be seen in students. Diagnostic Prescriptive Teaching (DPT); computer Assisted Instructions (CAI)-Drill and Practice (DAP); prognosis, making plans, implementation, assessment, change (DMPIAC); educate-take a look at-teach; individualized coaching; and project evaluation are some of the coaching strategies that can help college students triumph over those situations. Researchers have discovered that using Information and Communication Technology (ICT) to educate people with learning disabilities is a success. As a result, in this paper, the researchers have implemented ICT innovations using the Smart Text to Speech/Enhanced Speech to Text (ST2S-ES2T) Application. This advanced Android platform can be used by teachers using one or more teaching techniques, particularly drill and practice, to assist dyslexic students in conquering dyslexia.

Keywords*: Dyslexia, Dyslexic, CAI, ST2S, ES2T, Innovation.*

Introduction

The development of records and communication technology (ICT) in schooling includes adopting general additives of ICT in a studying manner. A prolonged study has confirmed that ICT can have promising results in gaining knowledge of Benmarrakchi et al. (2016). The digital generation and mobile computing are two associated phrases that, on occasion, can convey identical meanings in their context. The mechanism of m-mastering includes using cellular devices like mobile telephones, iPad, Personal Digital Assistants (PDAs), tablets, and laptops. According to Aliff Nawi et al. (2015), m-studying has created a method of learning that confirms variations compared to traditional methods usually utilized in proffering knowledge. Integrating m-studying within the learners' surroundings would be an easy motion if instructors or educators do now not take hold of the opportunity to use the cellular era in a school room placing, especially for learners with dyslexia - one form of learning disability or the other.

Dyslexia is a studying impairment that makes it extraordinarily tough to examine analysing talents. It is a fixed symptom that motivates people to war with precise language competencies and evaluation. As stated, utilizing the worldwide Dyslexia affiliation (The International Dyslexia Association, 2013), people with dyslexia enjoy problems with an

expansion of language abilities, together with spelling, writing, and announcing phrases. It also emphasized that 10% to 15% of the sector's populace suffers from dyslexia. Meanwhile, in the assertion of Siti Khatijah Nor et al. (2018), the percentage of dyslexic youngsters is increasing, which is concerning because the association has received a huge range of student enrolment as cognizance of the significance of presenting schooling and remedies to remedy dyslexic children's disabilities at an early stage.

This learning disability associated with remembering linguistic codes is neurological and has run in many families for hundreds of years. Different symbolic structures, including mathematical and musical notation, may also be prompted (Dyslexia Institute, 2001). In further support, Lyon, Shaywitz, & Shaywitz (2003) put it that dyslexia appear to be a neurologically-based completely mastering disease characterized by difficulties with accurate reading fluency, interpreting, and spelling potential due to a phonological component of the language deficit which can be overcome through consistent educational remediation. In another context, it is likened to the issue of mastering to decipher and spell lies on the coronary heart of dyslexia. As a result, we ought to frame our information about dyslexia in phrases of mastering to examine. The procedure of studying to read is lengthy (for evaluation, see Castles et al., 2018). Hence, to place it in some other manner, learning to look begins with expertise on how to map print to sound.

Considering other identifying factors, a vast body of research has since certain the nature of 'auditory' problems in dyslexia, narrowing the deficit to one affecting the sound (phonologic) shape of speech (Griffiths & Snowling, 2001; Vellutino et al., 2004): issues with phonology result in difficulty in getting to know mappings among orthography and phonology and different problems which consist of issues learning new spoken phrases, bad verbal quick-term memory, and troubles with word retrieval and photograph naming (see Snowling, 2019 for evaluation). Even though gaining knowledge to read has a reciprocal effect on phonological skills (Morais & Kolinsky, 2005), there is definitive evidence that phonological deficits in dyslexia are gifts inside the preschool years, long before analysing preparation begins (Snowling, Nash, et al., 2019). moreover, phonological schooling abilities and letter information improve analysing capacity, strengthening the declaration that phonological skills are causally related to studying development (Hulme et al., 2012). In the numerical sphere, it is seen that because many aspects of mathematics rely on verbal abilities, such as kind of information, counting, recall of various statistics, and verbal problem solving (Göbel & Snowling, 2010; Moll et al., 2018), the overlap with dyslexia is considerable. However, nonverbal abilities such as the capacity to assess numerosity and evaluate different magnitudes are included in using numerals for computation.

Diagnosis

No matter the full-size incidence of dyslexia diagnoses, there's disagreement regarding the actual nature of the circumstance. Some researchers argue (and feature attempt to demonstrate) that the foundation of dyslexia is in phonological processing (Saksida et al., 2016). different research shows that dyslexia is a mixture of phonological processing and problems with government functioning (which encompasses running reminiscence, making plans, inhibition, and set-shifting) (Smith-Spark et al., 2017). Nonetheless, different researchers posit a deficit in

implicit knowledge, such as the ability to discover patterns that are not made explicit, as within the early development of language abilities (Kahta and Schiff, 2016). Others, such as Elliott and Grigorenko (2014), argue that because all kinds of studying problems reply to the same forms of interventions (this is, phonological interventions), it makes no feel unmarried a few college students as having sickness and others as only having trouble with analysing. Their factor is if the interventions are the same, why diagnose a person with a neurocognitive "deficit?" As discussed later, it cannot be useful to diagnose individuals as having a disease, as it could now not change the interventions used but may instead serve to stigmatize unmarried out sure individuals in a higher academic setting.

The Way forward

Students with dyslexia can gain from pc applications that study digital text from e-books, websites, and documents written in phrase-processing structures. It also aids writing with tools such as predictive spelling, phrase desire, a dictionary, and a word list. PDAs and mobile devices also construct a supportive and collaborative classroom environment, offer multimodal input and activities, supply novices' options, and provide new language in small, digestible pieces within the lecture room.

The information and communications era is an extension of information technology (IT) that emphasizes the role of unified communications (Murray, 2011) and the combination of telecommunications (telephone lines and wi-fi signals) and cellular computing devices, inclusive of laptops, Smartphones, and private virtual assistants (PDAs), as well as necessary company software programs, middleware, garage, and audio-visual systems, that enable customers to access, keep, transmit, and acquire records (FOLDOC, 2008). Drilling and practising with these ICT sources on a normal foundation can help inspire students with learning disabilities. This is significant now that Android-based smartphones are ubiquitous in homes and classrooms. The software can help students grow specific studying, spelling, writing, and mathematical skills, in addition to imparting extra-curricular help across the curriculum. From easy word processors to speech recognition, CD-ROMs, and the internet, ICT technology offers a comprehensive set of methods (Becta, 2001).

Advances in the generation and the provision of records and verbal exchange era assets have positively impacted the reader's comprehension abilities (Berninger et al., 2015). Researchers have recognized the advantages of using information technology to assist dyslexic students in improving their reading abilities (Lysenko et al., 2014; Skiadaet al 2011; Zikl et al., 2011). In summary, their findings suggest that technological tools improve the conditions for dyslexic individuals to interact and participate in text analysis and comprehension activities (Cidrim & Madeiro, 2017). The usage of digital tools modernizes schooling and creates opportunities for extra-innovative education (Zikl et al., 2011).

This paper presents a novel ICT-based Smart Text to Speech/Enhanced Speech to Text (ST2S-ES2T) Android-based utility developed to assist students and individuals with dyslexia in regularly escaping the learning condition. This is primarily based on the progress made thus far in teaching dyslexic newcomers by proffering a smart approach that is easy to set up, run, and

grasp. The application being menu-driven, it is equipped with features that help teachers working with dyslexic students.

Operational Interface

      To effectively deploy the menu-driven application, Android Studio, the simple but respectable incorporated development environment (IDE) for Android, is used to create the smart textual content—to—speech and more desirable assisted speech—to—textual content Android-primarily based applications (ST2S-ES2T). This has been adopted because of its visible layout gadget, module-primarily based architecture, Android application package **(**APK) analyser, intelligent code editor, flexible build system, and aid for programming languages such as Java. The ST2S-ES2T drill and practice app is intended mainly to be used on the Android platform. As a result, it works just like every other Android software. It can be uploaded to the Google Play store, which can be pragmatic and downloaded by captivated instructors, students, or all and sundry who need to control their studying impairment.

Procedure / Method

      Any user of the Android smartphone **ST2S-ES2T** software has to genuinely presses the button with the icon shown in (figure 1) on the welcome screen of the mobile device represented in figure 2.
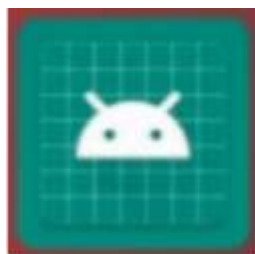
STTS-ESTT ICON ON THE ANDROID SCREEN

Figure 1: This figure is the icon of the ST2S-ES2Ton on the welcome screen.

ANDROID SCREEN

Figure 2: This represents the Welcome screen of a typical Android-powered Smartphone

On following the stepwise instructions, the menu to aid in the translation of the text to speech and vis verse is displayed in the conversion interface in figure 3 is displayed:

Figure 3: The Welcome screen of the ST2S-ES2TApplication with the main menu


Figure 4: The menu to convert Text to Speech.

Figure 5: This menu converts Speech to Text

The main menu in which the dyslexic learner will need to key in or enter the textual content to be converted to speech or reverse, as in figures 4 or 5, is prompted depending on whichever action is taken. In the case of a learner who decides to do a voice-to-text exercise, he selects voice-to-text on the menu, clicks on the microphone icon, and speaks something. At this point, Google Android receives the audio and uses it to deliver a voice recognition service, as depicted in figure 6a. A transcript is then shared with the ST2S-ES2T App, which eventually displays the corresponding text on the smartphone's display screen, figure 6b and 6c below.
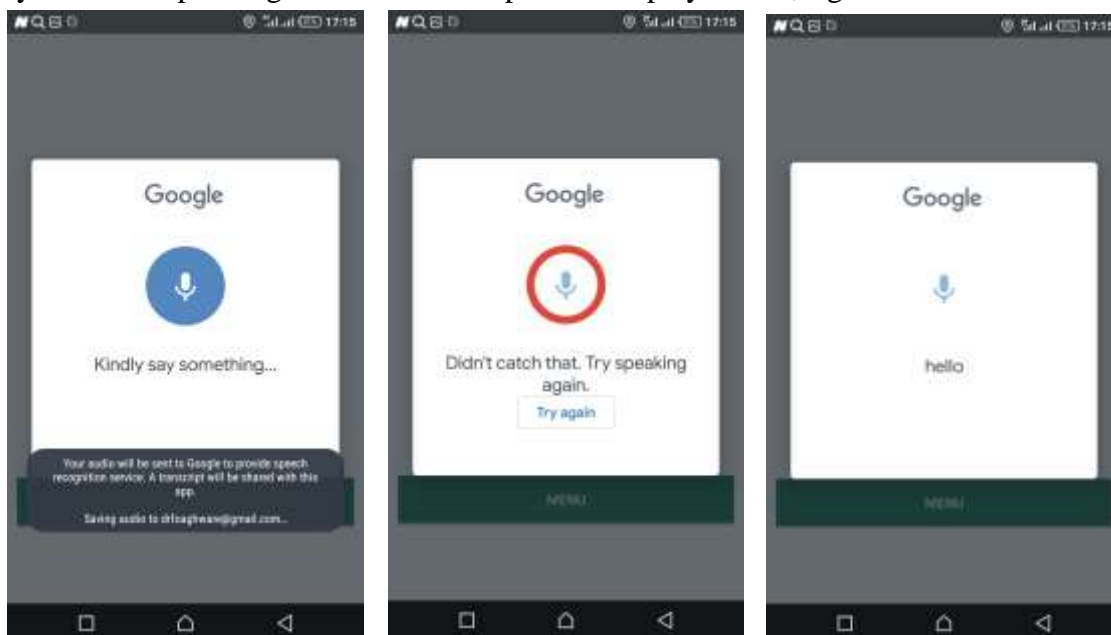
Figures 6:   a   b   c

The software program reformed into nicely-aligned in studying, writing, vocabulary, and speaking sessions, resulting in extensive enhancements in the learner's skills even though they practised drilling at their tempo.

Why deploy ICT tools in dyslexic studies?

Every of the biggest advantages and greatest uses of ICT is as a non-public guide tool that may empower pupils generally and particularly with getting to know difficulties to reap more independence and permit them to take responsibility for their mastering. Laptop-based knowledge of techniques that target getting to know as opposed to the content material itself can allow pupils to screen their learning. Those strategies can be especially useful for older learners taking many topics and getting ready for assessments.

Research revealed that students with dyslexia regularly find that it takes them an amazing deal of time to finish a piece of labour which could bring about negative motivation. ICT can help learners complete assignments faster, giving them a great sense of satisfaction with their achievements. Also, using computers and technology assists them in preparing and managing their workload. Children with dyslexia often use computers for help, and mind mapping software programs can be a useful resource for dyslexic kids by fostering non-linear wondering.

People with dyslexia can use the assistive era to store time and triumph over issues like behind-schedule word-taking and awful handwriting, allowing them to display their talents in previously imagined methods and offering them a way of brainstorming.

Conclusion

This technological era has had a massive effect on our lives, and it's an essential tool for dyslexic college students inside the schoolroom on the subject of each getting to know and teaching, as well as accessing and recording textual facts. While dyslexic newbies use innovations, It has been revealed that a few of the mastering disparities they face when studying, writing, spelling, accessing the curriculum, getting to know the vocabulary, enhancing phonic skills, and helping in recording displays end up being minor problems. This could result from specific applications to assist and improve reminiscence, abilities, planning, and organizational issues, as well as suitable speech-supported software programs, decided on hardware or equipment, or specific programs to guide and improve memory, talents, planning, and organizational problems.

Many dyslexic college students require a specialized software program-pushed technological environment that permits them to take danger whilst being patient and multi-sensory. Newcomers may get extra confidence as an upshot of this (Crivelli, 2013). The researchers are confident that teachers would cautiously compare and implement the ICT academic innovations provided in this paper, in addition to one or more instructional strategies for assisting dyslexic scholars in overcoming dyslexia in their lessons.

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