ADAPTIVE TECHNOLOGIES AND KEYBOARDING TECHNIQUES: UNLOCKING THE POTENTIAL OF INDIVIDUALS WITH SPECIAL NEEDS

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ABSTRACT

In this study, the importance of computer technologies and adaptive tools in supporting the roles of individuals with special needs in education, social participation and work life is examined. The use of keyboarding techniques and individualised technological solutions in educational processes enables individuals to gain digital skills and increase their independence. Adaptive technologies provide equal opportunities for individuals with physical and cognitive differences and enable individuals to realise their potential. In addition, regulations in the field of employment support individuals with special needs to gain economic independence and participate more actively in society. In this context, the adoption of inclusive policies and the effective use of technology in education and employment processes play a key role in the social integration of individuals with special needs.

Keywords: Individuals with special needs, computer technologies, keyboarding techniques, social integration, employment

1.0 INTRODUCTION

Today, computer use has become an indispensable tool in many areas such as access to information, communication, education and professional development. While the rapid development of technology offers new opportunities to improve the quality of life of individuals, it also creates an important equality ground for individuals with special needs. Especially for individuals with special needs, computer is a powerful tool that supports learning processes and encourages independence as well as facilitating daily life activities (Brown, 1992). The use of computers in many areas from education to professional life increases the participation of individuals with special needs in social life and enables them to realise their potential. In this context, the accessibility and effective use of computer use plays a fundamental role in building a more inclusive society (Edwards, 1995).

Keyboarding techniques play a critical role in increasing the accessibility of opportunities offered by technology in education for individuals with special needs to learn computer use. In today's world where technology is increasingly intertwined with education, mastering keyboarding skills allows individuals with special needs to be empowered in the areas of communication, access to information and digital literacy (Khaleel et al., 2023). Educators can create more inclusive learning environments by using special keyboarding techniques and adaptive technologies, thus increasing students' academic and social independence (Harrison

et al., 2008). Adaptive technologies, especially special keyboards, touch screens, virtual keyboards and special software, provide equal opportunities for students with physical and cognitive differences (Wu et al., 2002). These tools facilitate access to educational content and provide solutions suitable for the needs of individuals. Students with physical disabilities can interact with educational materials more effectively through touch screens or ergonomic keyboards. The use of these technologies not only increases accessibility, but also allows students to gain independence and participate more actively in learning processes (Brodwin et al., 2004).

The Individuals with Disabilities Education Act (IDEA) emphasises the importance of inclusive practices in education for students with special needs. This law aims to ensure that students receive free and appropriate education in the least restrictive environment through the creation of individual education plans. By drawing attention to the role of keyboarding techniques in educational processes, IDEA makes clear the importance of individualised approaches (Fuertes et al., 2008). However, there are some difficulties in teaching keyboarding techniques. These challenges include the lack of adequate support from educational institutions, physical accessibility problems and the need for customised instruction according to the individual needs of students (Trewin, 2003). In addition, overcoming attitudinal barriers is an important step, especially in terms of increasing students' self-confidence and participation in learning processes (Trewin et al., 2009). The ability of educators to deal with these barriers is necessary not only for technical skills but also for the development of an inclusive learning culture.

In this context, it is of great importance for educators to collaborate with students, parents and experts to understand the unique learning profiles of students with special needs and to select appropriate technological tools (Zwarych, 2023). This collaboration allows for the development of strategies appropriate to individual needs, enabling students to participate more effectively in the learning process. As the role of technology in education continues to expand, investments in this area allow all students to realise their potential and take on more active roles in society. In this direction, the use of effective keyboarding techniques and assistive technologies can serve as a bridge between traditional methods and the needs of students with special needs, supporting individualised educational approaches (Anson, 2011).

2.0 INDIVIDUALS WITH SPECIAL NEEDS

Individuals with special needs are people who need support and adaptations in their daily lives due to congenital or acquired physical, mental, sensory or spiritual differences (Wanti et al., 2023). While the differences experienced by these individuals diversify their individual abilities and life experiences, they also bring about the need for society to provide harmonised solutions in the fields of education, health, social services and employment. The concept of special needs refers to the supports and adaptations developed for individuals to realise their potential in the best way (Kauffman et al., 2018).

2.1 Types of Special Needs

Intellectual disability is a condition that causes individuals to experience difficulties in learning, problem solving and adaptation skills due to limitations in cognitive functions (Aubé et al., 2023). These disabilities can be categorised as mild, moderate, severe and advanced

(Karataş, 2001). Individuals with intellectual disabilities can generally be integrated into society with individualised education programmes and rehabilitation support (Totsika et al., 2022). Mental disability is one of the most common conditions among individuals with special needs.

Physical disabilities can be caused by congenital or acquired disabilities that affect the mobility of individuals. Conditions such as musculoskeletal disorders, spinabifida, cerebral palsy or amputation can be given as examples of physical disabilities (Stein et al., 2023). These individuals may require assistive devices (wheelchairs, walking aids) and adaptations to fulfil activities of daily living (Carter et al., 2021).

Sensory impairments cause individuals to have difficulty interacting with the environment due to losses or impairments in senses such as vision or hearing (Carvill, 2001). Visual impairments include conditions such as low vision or complete blindness; hearing impairments include conditions such as hearing loss or complete deafness (Keating & Hadder, 2010). Adaptations such as Braille, hearing aids or sign language are important in the education of these individuals (DolesyBugenhagen, 2018). Sensory disabilities require special support for individuals to move independently in social life.

Mental and emotional disorders include chronic problems that have a significant impact on an individual's mood, behaviour and social functioning (Holmes & Mathews, 2010). Depression, anxiety disorders, post-traumatic stress disorder and bipolar disorder are included in this category (Donley & Buckley, 2000). Individuals with these conditions can live their lives more effectively with psychotherapy, medication and social support (Hertel et al., 2009).

Developmental disorders include conditions that usually occur at an early age and cause differences in individuals' social interaction, communication and behaviour (Thomas et al., 2009). Autism spectrum disorder, attention deficit and hyperactivity disorder (ADHD) are included in this category (Fombonne, 2005). These individuals need individualised approaches and intensive support, especially in educational processes (Hulme & Snowling, 2013). Raising awareness of families and educators about these disorders enables individuals to take a more active role in social life.

2.2 Education of Individuals with Special Needs, Integration into Society and Working Life

Improving the quality of life of individuals with special needs and ensuring their full participation in society requires the implementation of effective strategies in the fields of education, social cohesion and employment. In order for these individuals to realise their potential and lead an independent life, an approach extending from education to working life is necessary. There are three basic principles to be followed in the education of individuals with special needs. These are self-care skills, socialisation and adaptation to working life (Kauffman, 2018). Education of individuals with special needs is important for the realisation of these principles. Individualised Education Programmes enable the creation of education plans for the specialised needs of these individuals. These programmes set goals appropriate to the individual's abilities and developmental level and enrich the individual's learning experiences through the joint work of family and experts (Lipkin et al., 2015). The use of technological aids facilitates individuals' access to education. The adoption of inclusive

education models in educational environments enables individuals with special needs to have learning experiences with their peers, and this becomes a fundamental step for the development of social skills and integration into society (Zigmond, 2003).

Integration of individuals with special needs into society contributes to the formation of a more inclusive and fair society by enabling these individuals to take an active role in social life. This process allows individuals with special needs to adopt their social roles, enabling them to discover their potential and express themselves in social life (Rodriguez & Garro-Gil, 2015). For the successful realisation of this process, the cooperation of families, educators, social workers and other community stakeholders is extremely important. While families guide their children in their developmental processes, educators should have the necessary equipment to meet the educational needs of individuals with special needs. Social workers, on the other hand, have an important responsibility to create social support mechanisms and defend their rights in the process of individuals' adaptation to society (Van De Ven et al., 2005). Organising physical and digital access areas in accordance with the needs of individuals with special needs is an important step in this process. These arrangements facilitate the social participation of individuals with special needs by enabling them to lead their lives more independently and efficiently. In this direction, infrastructures should be improved so that individuals with special needs can be included in social life without facing access barriers (Lopatynska et al., 2023).

Working life is very important for individuals with special needs to gain economic independence and adopt their social roles. However, the employment process of these individuals requires appropriate adaptations and support mechanisms. Vocational training programmes should be designed so that individuals can receive training in professions appropriate to their abilities, and workplaces should ensure the integration of individuals with special needs into their working environment by making physical and social adaptations (Vilà et al., 2007). At the same time, it is important to provide career guidance for individuals to cope with the difficulties they may encounter in business life (Dixon, 2005). The education, socialisation and integration of individuals with special needs into the society and working life enable them to realise their individual potential in the best way possible. Social awareness, education programmes, support mechanisms and inclusive policies are important for this process to be carried out successfully (Winer, 2000). These approaches will not only improve the quality of life of individuals with special needs but also support social development and inclusion.

3.0 IN COMPUTER USE OF INDIVIDUALS WITH SPECIAL NEEDS KEYBOARD TECHNIQUES

Computer use has become an indispensable part of modern life and provides individuals with access to opportunities in many areas from education to business life, from social life to personal independence. This situation has a much greater importance for individuals with special needs. The opportunities offered by computers and assistive technologies support the full participation of individuals in society by eliminating the barriers that may be created by physical, sensory or cognitive disabilities. Computer use for individuals with special needs plays a key role in providing equal opportunities in educational processes (Johansson et al., 2021). Access to educational materials is facilitated through computers and software; tools such as screen readers, speech recognition systems and adaptive keyboards increase the

participation of individuals in learning processes (Chaidi et al., 2021). These technologies allow individuals to realise their potential by eliminating barriers. A student with mobility limitations can access classroom materials via computer and perform tasks that require writing with voice recognition software (Fu et al., 2021).

Today, many job positions require basic computer skills and offer flexible job models that make it possible to work in a digital environment. By using computer technologies, individuals with special needs can go beyond traditional work environments limited by physical disabilities and find career opportunities in areas such as remote working, digital marketing or e-commerce. This supports individuals to gain economic independence and actively participate in society. Computer technologies are also an important tool that strengthens the participation of individuals with special needs in social life. Social media platforms, online communities and messaging applications allow individuals to maintain ties with their social environment and establish new connections (Taylor, 2004). Especially individuals with physical mobility limitations can participate in virtual activities, communicate with distant friends and participate in social life through computers (Akyıldız, 2024). In addition, computer use plays an important role in increasing the personal independence of individuals with special needs (Keijer & Breding, 2012). Daily life activities such as online shopping, bank transactions, access to health services become more accessible through computers. This increases the self-confidence of individuals by reducing the need for external assistance and improves their quality of life.

Computer education of individuals with special needs is a process in which individual differences should be considered. The physical, cognitive and emotional needs of the individual should be carefully evaluated while preparing the education plan. Learning materials and methods should be customised according to the type of disability of the individual (Hasselbring & Glaser, 2000). Screen readers, tactile keyboards and audio content should be used for individuals with visual impairment, while visual-based educational materials should be used for individuals with disabilities (Cooper, 2003). Computer education should be progressed in small and concrete steps. First of all, it is aimed to provide basic computer skills: switching the device on and off, using the mouse and keyboard, learning simple programmes. These skills form the basis for the individual to be able to use a computer independently (Gagliardi et al., 2007). During the training process, the progress of the individual should be evaluated regularly and training methods should be adapted according to the needs.

Learning keyboarding techniques, which is an important component of computer education, is a fundamental step for individuals with special needs to gain independence in the digital world and to enter business life (Edwards, 1995). The use of keyboard enables both the development of written communication skills and enables individuals to be more effective in various software and applications. For this reason, teaching methods and technologies appropriate to the needs of the individual should be used in the keyboard training process (Turpin et al., 2005). The learning of keyboard techniques by individuals with special needs should be supported by certain stages. In the first stage, it is aimed that the individual learns finger placements and gains correct writing habits. Auxiliary materials such as customised keyboard layouts, large print or colour-coded keys are very useful in this process (Brodwin et al., 2004). In addition, keyboards that provide tactile feedback or keyboards suitable for one-handed typing can be used for individuals with limited motor skills (Brown, 1992). During the training process, it is

important to practise typing to increase the speed and accuracy of the individual. For this, game-based keyboard training software can be an effective tool (Nagendran et al., 2021).

Today, many professions consider computer use as a basic requirement. Individuals who can use the keyboard quickly and accurately can be more successful in tasks such as data entry, text editing, e-mail correspondence and report preparation. It can be stated that especially for individuals with special needs to benefit from remote working opportunities, having advanced keyboard skills will provide a great advantage. However, the increased participation of individuals with special needs in the business world is not only limited to the technical skills of individuals; it is also necessary for employers to provide suitable working environments for these individuals. While keyboard training supports individuals to work more efficiently in these environments, it can be said that it will increase their productivity and help them gain self-confidence.

4.0 RESULTS AND DISCUSSION

The opportunities offered by computer technologies in a wide range of areas from education to employment, from social life to individual independence are considered as a fundamental tool in the construction of an inclusive society for individuals with special needs. In particular, the critical role that keyboarding techniques and adaptive technologies play in facilitating both the academic and social lives of individuals reveals the importance of individualised approaches. These tools not only facilitate the daily lives of individuals, but also enable them to reveal their potential.

In educational processes, the provision of technological solutions customised to the needs of individuals with special needs is a decisive factor in terms of equal opportunities. However, the physical, technical and attitudinal barriers encountered in the implementation of these solutions indicate that more inclusive education models should be developed. In particular, individualised programmes designed in cooperation with educators, parents and experts enable the effective use of technology. In this process, the selection of tools suitable for individuals' learning profiles and the adaptation of educational methods are key to achieving success. In order to increase social participation, it is necessary to make adaptations for individuals with special needs in working life as well as in education. Improvement of physical and social access areas facilitates the inclusion of individuals in employment processes and supports their economic independence. In addition, the adoption of inclusive policies by employers encourages the integration of individuals with special needs into the workforce.

The education of individuals with special needs, their integration into society and participation in business life is a critical process for individuals to realise their potential and lead an independent life. In this context, the possibilities offered by computers and adaptive technologies provide an important support for individuals to overcome the obstacles they face. The adoption of individualised approaches and inclusive policies in the process ranging from education to employment strengthens the active participation of individuals with special needs in social life. In this framework, sustainable support for access to and effective use of technology will enable individuals to be successful in both their personal and professional lives. Educators, families, employers and other stakeholders of the society play an important role in the successful implementation of this process. Expanding the opportunities provided by

technology and increasing accessibility is a fundamental requirement for a more inclusive society.

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