



INFORMATION TECHNOLOGIES AS A LEARNING CHALLENGE FOR STUDENTS WITH MODERATE INTELLECTUAL DISABILITY

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Abstract:

This paper shows some of the challenges that emerge while teaching Information Technologies to students with a moderate degree of intellectual disability. The authors present and summarize the possible perspectives of both teachers and students during the teaching process of this school subject.

Keywords: information technologies, IT, moderate intellectual disability, teaching process, students, teachers

1. Introduction

Information technologies (IT) is a school subject taught at school for all students – including the ones with moderate intellectual disability (MID). Being a teacher of MID students is sometimes quite a challenge to let them get involved in the educational process. It is difficult at times for teachers to make students interested in the subject and the activities during the school hour. According to [2], there are several factors that limit the reliability of common testing formats for students with intellectual disabilities, including limitations in literacy and problems with fine-motor and eye-hand coordination. Even when students with intellectual disabilities can read tests or survey items, they may focus on an irrelevant aspect of the question. Finally, there are often difficulties with determining the best response format for students in this population. Individuals with intellectual disabilities are more likely to respond in an acquiescent manner, and there is concern that yes/no test formats may be unreliable due to this acquiescence bias. A similar opinion is shared by Greek authors, such as Δεληγιάννης Ιωάννης, Polyxeni Kaimara, Αγγελάκος Κωνσταντίνος, Andreas Oikonomou (2018) [12]. As Wehmeyer et al. (2004) [11] claim, technology is a prevalent feature of educational environments today. Unfortunately, in too many cases students with intellectual disabilities do not have access to or are not able to use such technologies.

According to Reynolds et al. (2017) [7], individuals with intellectual disabilities benefit from the same teaching strategies used to teach people with other learning

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challenges. One such strategy is to break down learning tasks into small steps. Each learning task is introduced, one step at a time. This avoids overwhelming the student. Once the student has mastered one step, the next step is introduced. This is a progressive, step-wise, learning approach. It is characteristic of many learning models. The only difference is the number and size of the sequential steps [7].

A second strategy is to modify the teaching approach. Lengthy verbal directions and abstract lectures are ineffective teaching methods for most audiences. Most people are kinesthetic learners. This means they learn best by performing a task "hands-on." This is in contrast to thinking about performing it in the abstract. A hands-on approach is particularly helpful for students with ID. They learn best when information is concrete and observed. For example, there are several ways to teach the concept of gravity. Teachers can talk about gravity in the abstract. They can describe the force of the gravitational pull. Second, teachers could demonstrate how gravity works by dropping something. Third, teachers can ask students directly experience gravity by performing an exercise. The students might be asked to jump up (and subsequently down), or to drop a pen. Most students retain more information from experiencing gravity firsthand. This concrete experience of gravity is easier to understand than abstract explanations.

Third, people with ID do best in learning environments where visual aids are used. This might include charts, pictures, and graphs. These visual tools are also useful for helping students to understand what behaviors are expected of them. For instance, using charts to map students' progress is very effective. Charts can also be used as a means of providing positive reinforcement for appropriate, on-task behavior.

A fourth teaching strategy is to provide direct and immediate feedback. Individuals with ID require immediate feedback. This enables them to make a connection between their behavior and the teacher's response. A delay in providing feedback makes it difficult to form a connection between cause and effect. As a result, the learning point may be missed.

All these four teaching strategies can be applied to students with moderate ID while teaching them IT at school. Additionally, an IQ below 70 to 75 indicates an intellectual disability, according to the National Dissemination Center for Children with Disabilities (called NICHCY). The deficits in "adaptive behavior" cited by IDEA prove trickier to evaluate. Factors considered include the ability to comprehend and participate in a conversation, to understand and follow social norms and to perform activities such as getting dressed and using the restroom. NICHCY explains that the causes of intellectual disabilities vary from pregnancy issues and complications at birth to genetic conditions (such as Down syndrome and fragile X syndrome) and health problems early in life, including diseases like measles and contact with poisonous substances such as lead and mercury (Intellectual Disability, 2018). This source also cites that a number of traits can point to an intellectual disability. The National Institute of Child Health and Human Development (NICHD) lists the following among early indicators:

- Delay in reaching developmental milestones such as sitting up and talking,
- Difficulty remembering things,

- Trouble comprehending accepted social behaviors and/or understanding the consequences of actions,
- Poor problem-solving skills (Intellectual Disability, 2018).

Obviously, an intellectual disability creates many educational challenges that must be overcome. These include:

- Trouble understanding new concepts,
- Inappropriate behavior,
- Limited vocabulary,
- Difficulty accomplishing complex tasks.

Additionally, educating individuals with intellectual disabilities requires awareness and much patience. Awareness involves a conscious effort to choose activities and words wisely. For instance, if a student demonstrates artistic talent, encourage him or her by providing assignments geared towards this skill set. Parents can help by suggesting related activities that their children can pursue as hobbies. In addition, carefully picking your words will reduce potential problems caused by students' limited vocabularies.

Patience is an integral component in addressing the aforementioned educational challenges. You will likely need to go over lessons or correct a student's inappropriate behavior multiple times. One way to make repetition more effective is to accompany verbal instruction with additional cues; for example, show pictures to reiterate spoken directions.

To combat difficulty in completing complex tasks, NICHCY advises dividing these tasks into small steps. The organization also recommends giving immediate feedback to help a child learn when he or she is performing a step correctly.

One final tip does not necessarily correspond to any particular academic obstacle, but rather addresses educational focus as a whole, at least at the high school level. Analyze the student's skill set to decide how to proceed with transitioning into adulthood. For instance, does a student have the capabilities that will enable that student to live on his or her own? If so, later years in school should focus on enhancing the skills that will allow him or her to live independently (Intellectual Disability, 2018).

As Lussier-Desrochers et al. (2017) [5] claim, recent data from several studies and surveys confirm that our society has entered the digital and information age (Licoppe, 2009). By definition, the digital society is one where information and communication technologies (ICT) are the cornerstone of interactions between individuals (Compiègne, 2011). For citizens, this shift has several advantages, including almost unlimited access to information and entertainment as well as a proliferation of opportunities to socialize through digital media. Some authors mention that ICT has the potential to enhance people's power to act and promote equal citizen participation (Allard, 2007; Jenkins, 2006). These elements are particularly important for people living with intellectual disabilities (ID) (Lachapelle & Wehmeyer, 2003; Watkins, 2014). However, it seems that a gap has gradually emerged between them and the connected citizen (Chadwick, Wesson, & Fullwood, 2013). This could be explained in part by the perceived risks of Internet

access and use (Chadwick, Quinn, & Fullwood, 2016; Seale, 2014) as well as evidence of online victimization (Buijs, Boot, Shugar, Fung, & Bassett, 2016; Sallafranque St-Louis, 2015) for people with ID [5].

In the 11th edition of its Definition and Classification Manual, the American Association on Intellectual and Developmental Disabilities [1] defines intellectual disability as a condition “*characterized by significant impairments both in intellectual functioning and in adaptive behavior as expressed in conceptual, social, and practical adaptive skills*” (p.1), that is present before the age of 18 years. The literature mentions that the prevalence of this condition varies from 1% to 3% in the general population [10]. Nonetheless, the simple presence of these three criteria should not justify a diagnosis of ID; it is also important to consider five postulates that take into account the great complexity of a multidimensional assessment including sensorimotor, behavioural and communication differences as well as the co-existence of limits and strengths within an individual (American Association on Intellectual and Developmental Disabilities [1]. The AAIDD has further established that intellectual disability no longer stems only from the person, but also from the person’s interactions with his or her environment. Given this conceptualization, it becomes obvious that specific means must be implemented to adapt the environment to these people’s individual abilities so they can express and improve them or develop new ones, as well as participate and exercise a valued role in society and have a better quality of life [1]; [5].

As Gutiérrez & Zaragoza (2011) [4] claim, information and communication technologies for example have brought profound changes to our environment and in the ways, we relate to each other. Television, cell phones and Internet use have opened up new prospects for communication, leisure activity and education in our increasingly globalized world. Without question, these new technologies have greatly facilitated the exchange of information among individuals and thereby contributed to the eradication of distance and physical barriers. However, as Núñez and Liébana (2004: 40) [6] have recently pointed out, “*in this globalized, interconnected world inequalities are still evident, as in the fact that ICTs are not equally accessible to all*”. Accessibility should not just be understood as a financial issue [4].

Using ICTs normally requires specific knowledge and operating skills that must be learned, and for certain sectors of society that can be complicated. As we all know, the younger generation has a real flair for adapting to technological changes –perhaps because they have been used to using technology since early childhood– while older people have greater difficulties (and are more reluctant) to avail themselves of the opportunities of the digital era. Likewise, for some individuals or groups in society, access to new technologies may be affected by barriers that are not readily apparent and which have hardly been studied. In this regard, we believe that research must focus more on these groups of individuals who, by virtue of their inherent characteristics, may have an access differential in terms of information and communication technologies. The need for this becomes even more urgent when dealing with individuals who have traditionally been overlooked in research on the use of new technologies. One group that is all too

often «invisible» to investigators of new communications technologies consists of people with intellectual disabilities [4].

Intellectual disability is a meta-syndrome characterized by significant limitations in intellectual functioning and learning [8] that manifests as dysfunction in practical, social and conceptual skills [9]. The concept of ID is complex, involving various biological, psychological and social factors. In the past, expressions such as «mental retardation» and ‘mental deficiency’ were used in reporting on this phenomenon. Currently, however, there is a broad consensus for using the term «intellectual disability» as it does not have such a pejorative connotation. Traditionally, the intelligence quotient (IQ) is the main tool for quantifying the degree of ID. The International Classification of Diseases (ICD-10) published by the World Health Organization establishes four levels of ID in terms of its severity: mild (IQ from 50 to 69), moderate (IQ from 35 to 49), severe (IQ from 20 to 34), and profound ID (IQ less than 20) (WHO, 1994). The term «borderline intelligence» has also been introduced to describe those who have intellectual limitations but whose IQ is above 70; so, strictly speaking, they do not have ID [4].

Based on this overview and deep analyses, we are able to conclude that:

- 1) Students with a moderate degree of ID should not be treated and educated as students with other degrees of ID, e.g. with mild or severe – applying equal methods and teaching strategies for teaching them IT.
- 2) Students with a moderate degree of ID at the secondary school level are capable of mastering essential skills in IT classes, however, they need more time some time as well as a special approach applied in order to take full advantage of the teaching process.
- 3) There are interactive educational programs that are suitable for use in the classroom of IT during teaching moderate ID students.
- 4) Students with moderate IT are more enthusiastic in IT classes when they receive positive feedback regularly on their progress from the teacher.
- 5) IT teachers involved in the educational process of students with a moderate degree of IT should be aware of their peculiarities and abilities in order to be able to lead them properly in the school in-class activities and in order for them to be able to assess them adequately.

Conflict of interest statement

The author declares no conflicts of interest.

About the Author

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