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FACTORES PSICOLÓGICOS QUE DETERMINAN EL EMPLEO DE LAS TIC CON ESTUDIANTES DE EDUCACIÓN SECUNDARIA DESDE UNA PERSPECTIVA INCLUSIVA

HOW ICT INFLUENCE PSYCHOLOGY OF STUDENTS WITH INTELLECTUAL DISABILITIES FROM AN INCLUSIVE EDUCATION PERSPECTIVE

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TITULO: *How ICT influence psychology of students with intellectual disabilities from an inclusive education perspective*

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TÍTULO DE LA TESIS: FACTORES PSICOLÓGICOS QUE DETERMINAN EL EMPLEO DE LAS TIC CON ESTUDIANTES DE EDUCACIÓN SECUNDARIA DESDE UNA PERSPECTIVA INCLUSIVA

DOCTORANDO/A: EVANGELIA VAGENA

INFORME RAZONADO DEL/DE LOS DIRECTOR/ES DE LA TESIS

El trabajo realizado por la doctoranda ha seguido los pasos y cauces propios del desarrollo de una tesis doctoral realizada principalmente en modalidad online, dado el lugar de residencia del doctorando (Grecia).
Se han llevado a cabo sesiones "enlatadas" de tutoría vía Skype, así como conversaciones vía WhatsApp y presenciales durante la estancia realizada por el doctorando en Alicante en 2018 y 2019 Todo ello ha permitido acercar mutuamente a la doctoranda y a los directores.
La redacción del marco teórico que sustenta este trabajo de investigación ha sido constante y se encuentra actualizada en la temática que se investiga. Se bebe de fuentes tradicionales en el ámbito de las creencias del docente hasta llegar a las últimas tendencias tanto teóricas como investigadoras. La búsqueda de la información, por tanto, ha sido continua y fluida, poniendo de relieve que es un campo en evolución y crecimiento.
La implicación del doctorando ha sido correcta en la búsqueda de la muestra y de la recogida de los datos, si bien se ha tenido dificultad en su acceso dado el marco jurídico vigente en Grecia en torno el acceso a estudiantes menores de edad.
Las pruebas realizadas en torno a los datos estadísticos son pertinentes dando respuesta a las hipótesis planteadas, así como a los objetivos, permitiendo la redacción de las evidencias y conclusiones derivadas.
Por otra parte, a fecha de hoy se ha conseguido un indicio de impacto en la revista Texto Livre con un ID de 9.6 (http://miar.ub.edu/issn/1983-3652) y un posicionamiento en SJR de Q2 (https://www.scimagojr.com/journalsearch.php?q=21100833036&tip=sid&clean=0).

Por todo ello, se autoriza la presentación de la tesis doctoral.

Córdoba, 12 de marzo de 2022
Firma de los directores

Fdo.: VERÓNICA MARÍN DÍAZ & SEBASTIAN RUBIO GARCÍA

University of Cordoba

Department of Education

Phd Title

HOW ICT INFLUENCE PSYCHOLOGY OF STUDENTS' WITH INTELLECTUAL DISABILITIES FROM AN INCLUSIVE EDUCATION PERSPECTIVE

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Abstract

Inclusive education is a key tool for promoting equity in educational opportunities, that is using ICT and accessible web and non-web content to support the learning of students with disabilities in inclusive settings within compulsory education. This thesis is focusing on **disability** including the challenges that disabled students faced in Greece. An elaborate description of the terms **Special Education** and **Inclusive Education** is made. Additionally, ways supporting Greek special education system are also stated. In this context, challenges concerning access to software application faced by disable users are mentioned, as well as the most regularly used Assistive Technologies. **Guidelines** are also ponted out explaining how application, content and web-content can be made **accessible** to people with all types of disabilities.

The study aims to determine how such familiar are Educators using ICT tools during the learning process of students with disabilities both in special and mainstream school setting, in Greece. More specifically, to define views and feelings regarding the benefits of using ICT for students with vision, speech and auditory disabilities, intellectual and cognitive disabilities, as well as physical impairments. Lastly, to investigate how much Educators are familiar with **accessibility** issues, applying **accessibility tests** and how capable Educators are to create comprehensible and navigable **web** and **non-web content accessible** by the disable. The study reveals that **age** and **years of teaching experience** in **regular** but also in **special education** play a significant role, as for the type of employment little contribution to the results and only for full-time Educators with public or private contracts.

Number of words in Abstract: 254

Keywords: Inclusive Education, ICT in Education, Students with Disabilities, Accessibility Issues

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Introducción y resumen

Introducción o motivación de la tesis

En primer lugar, el objetivo de la educación especial para personas con discapacidad es introducir y potenciar habilidades académicas, así como fortalecer la calidad de vida de las personas y potenciar su independencia y autodeterminación (Saridaki &. Mourlas, 2014). Las investigaciones tanto en la ciencia pedagógica como en psicología concluyen que las personas con discapacidad pueden volverse menos dependientes y expresar mejor sus elecciones y preferencias, incluso si nunca lograrán vivir de manera completamente independiente (Heward, 2011)

Los rápidos avances en la tecnología de la información han cambiado significativamente la forma de vida de muchas personas durante las últimas décadas. El impacto de las TIC (Tecnologías de la Información y la Comunicación) en la educación ha sido revisado desde principios de la década de 1970, donde cada vez más educadores se convencieron de que las TIC apoyan a los y las estudiantes en la educación formal. No obstante, la mayoría del software, los juegos educativos y los sitios web con los que interactúa el estudiantado con discapacidad, se crean sin tener en cuenta las necesidades especiales, por lo que esas aplicaciones resultan ineficientes o completamente inaccesibles en algunas ocasiones (Saleh et al., 2013)

El papel principal de las TIC en la educación especial debe ser satisfacer una diversidad de necesidades subjetivas del alumnado a través de una infraestructura técnica y tecnológica adecuada. Todas las actividades educativas, como la organización de un plan de estudios, el tratamiento de la evaluación y la comunicación con los estudiantes, pueden ampliarse y potenciarse utilizando plataformas de aprendizaje adecuadas. La tecnología como herramienta educativa ha sido bien revisada, como puede verse en la investigación de Somekh, reflejando sus beneficios y sus posibles inconvenientes; y no solo en la educación de los niños, sino también en la formación de docentes. Es por este motivo que escuelas y universidades han adoptado ciertas herramientas tecnológicas, como dispositivos móviles o robots, para impulsar la calidad y diversidad de sus métodos de enseñanza (Trigo & Brown, 2014)

En general, se acepta que la educación es un derecho universal, lo que indica la necesidad de validar la **accesibilidad** como una condición de alta prioridad cada vez que las tecnologías se incorporan al proceso educativo. De otro modo, se está poniendo en peligro la igualdad de oportunidades en la educación para todo el estudiantado (Torrente et al., 2015)

Debe combatirse la marginación y la exclusividad, especialmente en la educación pública gratuita. Sin embargo, la "receta mágica" puede encontrarse finalmente en la **educación inclusiva**. Los y las estudiantes de todos los niveles y habilidades intelectuales deben compartir la misma clase en el contexto del concepto "progresista", con el lema: **una escuela para todos y todas**

La presente tesis doctoral se centra en el estudiantado con discapacidad, los beneficios de las herramientas TIC y los problemas de accesibilidad web y de contenido. Más específicamente, el objetivo es explorar qué tan seguros se sienten los educadores al usar herramientas TIC relacionadas con todo tipo de discapacidades en entornos escolares especiales y ordinarios. Se buscó también definir puntos de vista y sentimientos con respecto a los beneficios de las tecnologías de asistencia y cómo los desarrolladores pueden crear contenido web (y otros) accesible para todo tipo de discapacidades. Por último, se trabajó para determinar cómo se sienten los educadores en las pruebas de accesibilidad del sitio web y qué tan familiarizados están con las pautas generales de accesibilidad WAI / W3C para crear sitios web con altos parámetros de accesibilidad.

Definición de discapacidad

El término discapacidad se refiere al deterioro físico, cognitivo, mental, sensorial, emocional, del desarrollo o la combinación de estos. Una discapacidad puede diagnosticarse desde el nacimiento o evolucionar durante la vida de un ser humano. Desde el punto de vista de la socialización, el individuo con discapacidad enfrenta el peligro de la inseguridad de sus capacidades, la ansiedad de copiarse en diversas situaciones y el miedo al rechazo social cuando no cumple con una tarea. El peligro puede estar intercalado a través de la repetición de tareas a dominar, acumulando la confianza de una persona y potenciando así las relaciones sociales que establece con otras personas (Tomé, Pereira, & Oliveira, 2014).

Las estadísticas sobre discapacidad del Banco Mundial muestran que más del 10% de la población de nuestro planeta parece sufrir algún tipo de discapacidad (Saleh et al., 2013). El *Conflicto Nacional de las Personas con Discapacidad* establece que la coexistencia de muchas discapacidades limita la autonomía y la capacidad de comunicación de la persona mientras su vida depende de los demás: la familia, la sociedad y el estado. La definición de IDEA (Individuals with Disabilities Education Act - Ley de Educación para Individuos con Discapacidades) agrega la combinación de discapacidades para generar necesidades educativas tan graves que no pueden satisfacerse con programas de capacitación específicos que involucren solo uno de los trastornos (William et al., 2009).

Discapacidades Intelectuales: las *discapacidades intelectuales (DI)* son complicadas y variadas. Las barreras a las que se pueden enfrentar las personas con discapacidad intelectual son diversas y dependen en gran medida del tipo de discapacidad (Torrente

et al., 2015). El término Discapacidad Intelectual se refiere a un trastorno del desarrollo que influye en el comportamiento adaptativo y el funcionamiento intelectual de un individuo (AAIDD, 2013). Normalmente se hace referencia a las personas con discapacidad intelectual como si fueran un grupo homogéneo con respecto a diferentes condiciones (Winnick, 1999).

Discapacidad cognitiva: la cognición se refiere a los procesos relacionados con el pensamiento y las experiencias. Más específicamente, la cognición se refiere a "un proceso de identificación, selección, interpretación, almacenamiento y uso de información para dar sentido e interactuar con el mundo físico y social, para realizar las actividades cotidianas y para planificar y promulgar el curso de la vida laboral de uno". (Kielhofner, 2009, p. 85). En la literatura, los investigadores mencionan con frecuencia diferentes campos cognitivos como la percepción, la atención, la memoria, el lenguaje, la planificación, la organización, el control y la evaluación de situaciones (Wahlund et al., 2011). La mayoría de las habilidades anteriores alivian el envejecimiento normal. Tomemos, por ejemplo, la memoria a corto plazo y cómo aprende la gente, qué tan rápido piensa la gente (Rönnlund et al., 2005, Fastbom et al., 2014).

Discapacidades de la vista: esta categoría incluye a personas con:

- Ceguera: incluye una pérdida irreversible y significativa de la visión en ambos ojos.
- Visión reducida: hay muchos tipos de visión reducida, como *reducida agudeza visual* (la visión no es intensa), *túnel de visión* (pérdida de la visión periférica con retención de la visión central), *pérdida del campo central* (visión alrededor del campo visual central) y *visión borrosa*.
- Daltonismo: incluye la incapacidad del ojo para distinguir los colores. Un problema frecuente del daltonismo es la dificultad para distinguir entre rojo y verde, o entre amarillo y azul.

Discapacidades auditivas: esta categoría de usuarios incluye personas que son completamente sordas o tienen dificultades auditivas en uno o ambos oídos. El idioma nativo de algunas personas sordas es el lenguaje de señas, y quizás (o quizás no) para leer cómodamente o hablar con claridad un lenguaje escrito. A veces pueden utilizar alguna aplicación de software que les ayuda con subtítulos para cualquier contenido de audio.

Discapacidades del habla: incluyen dificultades para producir el habla o en términos de volumen o claridad. Las personas que pertenezcan a esta categoría y deseen utilizar parte de una aplicación de software basada en el reconocimiento de voz deberían poder utilizar un modo de entrada alternativo, como la introducción de texto a través del teclado.

Discapacidades físicas: esta categoría se relaciona con una amplia gama de personas con diferentes tipos de discapacidades físicas. Más concretamente, incluye debilidad, restricciones del control muscular (como movimientos involuntarios, falta de coordinación o parálisis), limitaciones sensoriales, problemas articulares o pérdida de extremidades. Algunas discapacidades físicas incluyen dolor que impide el movimiento. Estas condiciones también pueden afectar los brazos y los hombros, u otras partes del cuerpo.

Contexto Escolar Especial

En Grecia, las escuelas especiales suelen organizarse según categorías de discapacidad, como escuelas para niñas y niños ciegos o sordos, niños con dificultades de aprendizaje, problemas de comportamiento, discapacidades físicas y múltiples. La educación segregada ha dado lugar identidades separadas de las personas con discapacidad y, en muchos casos, el aislamiento de sus hogares y comunidades. El profesorado "especialista" también se dividen en categorías, tradicionalmente en Grecia. Tienen formación adicional, o experiencia, en braille, lengua de signos, etc. La separación se agrava en las universidades, en los organismos gubernamentales, las asociaciones de padres y las organizaciones de personas con discapacidad.

Las regiones más pobres sólo son capaces de brindar educación a una pequeña minoría de niñas y niños discapacitados. Esto generalmente se lleva a cabo en instituciones ubicadas en ciudades u otros lugares donde los pequeños pueden estar lejos de su ciudad natal. Esto debilita los lazos familiares, los aleja de la vida familiar y del futuro empleo en la comunidad, y puede conducir al abandono. Los chicos y chicas discapacitados, especialmente las niñas, son más vulnerables al abuso físico y sexual. Esta vulnerabilidad se incrementa si se educan en instituciones residenciales.

Ventajas	Desventajas
Las escuelas especiales pueden desarrollarse como centros de excelencia.	Las escuelas especiales no suelen estar disponibles en el entorno inmediato del niño.
Concentración de la experiencia en deficiencias específicas.	La experiencia solo está disponible para un pequeño grupo de niños y niñas.
La proporción alumno-maestro permite que cada niño tenga más atención.	El sistema de enseñanza es muy caro. Por lo tanto, no es asequible ni sostenible para todas las familias.
Los niños crecen con sus compañeros discapacitados y desarrollan una cultura común.	A los niños les resulta difícil readaptarse a la vida con sus familias, compañeros y comunidades.

Ventajas y desventajas de los entornos escolares especiales.

Debido al elevado costo de la educación especial basada en este modelo, muchos gobiernos regionales están reconociendo la necesidad de desarrollar un sistema más asequible que proporcione una educación de calidad para todo el estudiantado. Cada vez más, quienes trabajan en educación especial ven la necesidad de establecer vínculos con la corriente principal para avanzar hacia prácticas más inclusivas.

Educación inclusiva

A continuación se describe el concepto de *educación inclusiva*, en particular cómo se aplica al estudiantado con discapacidad y cómo se diferencia de *la educación especial*.

Preparar a nuestros estudiantes con discapacidades para que desarrollen su máximo potencial. *Obtenido de: https://eachoneteachone.net/project/goals-and-objectives-of-special-education/*

Identificando la aptitud o "capacidades diferentes" de cada estudiante, la educación de estudiantes con necesidades educativas especiales en escuelas inclusivas se convierte en una responsabilidad compartida entre docentes, equipos directivos, educadores especiales y todos los actores involucrados, en general (Ahmad, 2015a; Praisner, 2003); reivindicar un cambio de actitud, disponibilidad y accesibilidad de infraestructura adecuada, métodos y materiales basados en las necesidades para impartir instrucción y evaluación adaptada; y el tema muy obvio de la aceptación en todos los niveles del sistema educativo (Ahmad, 2014; 2015b; Stainback y Stainback, 1984).

La educación inclusiva es diferente de la educación especial, que toma una variedad de formas que incluyen escuelas especiales, unidades pequeñas y la integración de niños individuales con apoyo especializado.

La filosofía de la educación inclusiva según Peters (2007) se basa en el derecho inalienable de todas las personas al acceso igualitario a estructuras educativas equitativas que desarrollen sus capacidades y habilidades respetando su dignidad (Papastergiou, 2017). Un tema importante en la Educación Especial es la inclusión de niños y niñas con necesidades educativas especiales al contexto escolar con compañeras sin necesidades educativas especiales.

Curatelli y sus colaboradores también coincidieron en que uno de los mayores desafíos de la sociedad actual se refiere a la transición de la integración a la inclusión de los estudiantes con discapacidad intelectual (Curatelli et al., 2013). Este cambio de rumbo no se puede hacer de un día para otro. Se puede describir más como un proceso evolutivo que debe pasar por muchas etapas. Las prácticas de aprendizaje inclusivo permiten que las personas aprendan a su propio ritmo de acuerdo con sus capacidades emocionales, cognitivas y físicas.

Un estudiante con discapacidades de aprendizaje, como discapacidades cognitivas e intelectuales, puede obtener múltiples beneficios de su inclusión en la escuela ordinaria. Esos beneficios han sido destacados por varios investigadores (Downing & Eichinger 2003; Katz & Mirenda 2007, Papastergiou, 2017). Muchas personas destacan especialmente los beneficios en el área de las habilidades sociales, pero los estudios muestran que enseñar a chicos y chicas con discapacidades cognitivas e intelectuales en una clase típica puede contribuir positivamente tanto al desarrollo de habilidades académicas y sociales como de otro tipo (comunicativas, conductuales, motrices) (Downing & Eichinger, 2003).

La diferencia de la educación inclusiva frente a otras opciones educativas es que se relaciona con el establecimiento de un sistema educativo que se oponga a la exclusión de cualquier persona, asegurando la asistencia de los niños y niñas con discapacidad a la escuela ordinaria, pretendido desde la integración y la inclusión. Este es también el factor determinante que hace que la implementación de los principios de inclusión sea uno de los mayores desafíos de todo sistema educativo (Acedo, Ferrer & Pamies, 2009). No es un modelo diferente de educación especial, sino un enfoque completamente diferente de la educación en su conjunto. Un enfoque que aborde las diferencias individuales de los estudiantes no como problemas, sino como oportunidades para enriquecer el proceso de aprendizaje (Unesco, 2005). En última instancia, su objetivo es proporcionar una educación más adecuada para todos los niños y niñas, con y sin discapacidad, en un contexto educativo donde todas las personas puedan evolucionar de acuerdo a sus habilidades, capacidades y talentos (Papastergiou, 2017)

Se han estudiado muchos métodos y estrategias específicas en el campo cognitivo de la educación especial potenciando la inclusión de los niños con discapacidad: la adaptación curricular, las actividades, las tecnologías asistidas, la enseñanza en grupo y el apoyo en el aula son algunas de ellas (Downing & Eichinger, 2003; Papastergiou, 2017). Sin embargo, la inclusión de los niños con discapacidad en un contexto escolar ordinario no deja de ser un desafío particular tanto para el sistema educativo como para todos los docentes, familias y alumnado involucrado (Papastergiou, 2017)

A pesar de los beneficios indiscutibles que surgen de la educación de inclusión (Karvonen, Wakeman, Browder, Rogers, & Flowers 2011), están surgiendo dificultades para adaptar el proceso de aprendizaje de manera que permita que este estudiantado participe por igual (Papastergiou, 2017)

Según Forlin (1995), la mayoría de los educadores (95%) cree que los niños con discapacidades leves deben integrarse parcialmente en la clase ordinaria, mientras que sólo un pequeño porcentaje de docentes (6%) puede aceptar la inclusión total de los niños con discapacidades graves (Papastergiou, 2017). Asimismo, se afirma que los equipos docentes rechazaron por unanimidad la educación inclusiva para niños y niñas con discapacidades severas. Según Lifshitz y sus asociados (2004), las actitudes de los educadores hacia la inclusión no son independientes de la forma y la gravedad de la discapacidad de los estudiantes, ya que dictan el tipo de apoyo educativo que necesitaran en el aula.

En la educación inclusiva se espera que cambie el sistema, no la persona. La educación inclusiva ha surgido del modelo social de discapacidad, y reconoce que todos los niños son diferentes y que la escuela y el sistema educativo deben cambiar para satisfacer las necesidades individuales de todo el alumnado, con y sin discapacidad. La inclusión no significa, sin embargo, asimilación o igualar a todas las personas.

Apoyo al cambio del sistema educativo

La mejora escolar puede ser la consecuencia de la introducción de la educación integrada o puede brindar la oportunidad de que se lleve a cabo la educación integrada. Sin embargo, cualquiera que sea la ruta que se tome, se producirá una mejora escolar.

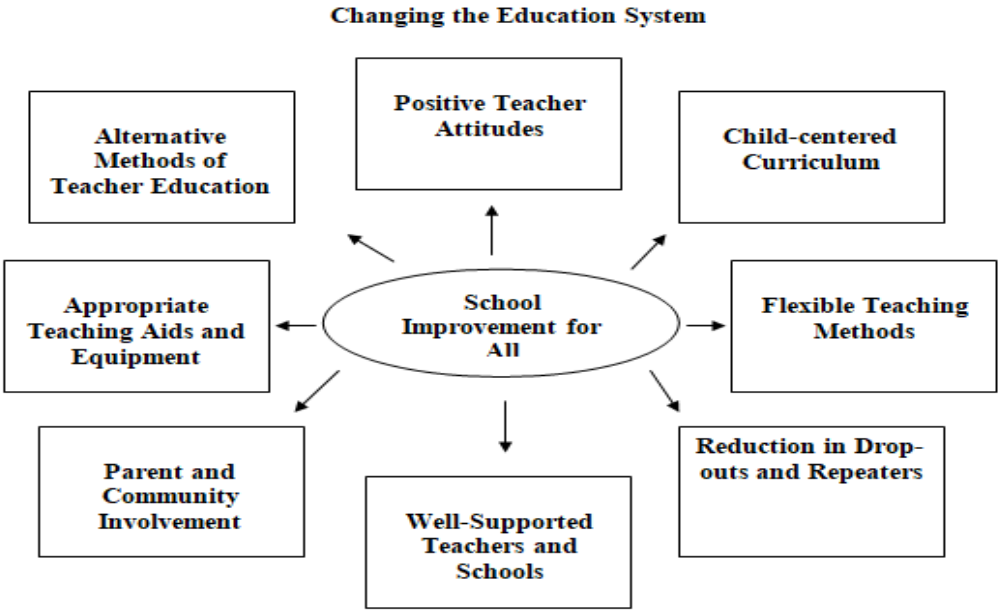
En muchos países, la formación de especialistas de educación especial se organiza por separado. Si se espera que todos los educadores enseñen a niños con una variedad de habilidades y deficiencias, su capacitación debe reflejar esto. Del mismo modo, si el papel de los especialistas (p. ej., logopedas, psicólogos) va a cambiar dentro de un sistema inclusivo, también necesitan una formación más adecuada que les permita asumir el papel de apoyar a las escuelas locales en el desarrollo de prácticas más inclusivas. El currículo y el sistema de evaluación debe ser relevantes para todos los niños. Donde hay un currículo flexible, todo el alumnado tiene oportunidad de aprender y beneficiarse de la educación, y sus logros pueden ser reconocidos.

Reconocemos que, en algunos idiomas, no siempre es posible hacer la distinción entre integración e inclusión. Sin embargo, la comprensión de la distinción en inglés es útil y es importante para promover prácticas más inclusivas. Una distinción simple es:

> *La educación integrada* consiste en que los niños discapacitados vayan a las escuelas convencionales (es decir, la atención se centra en las tasas de asistencia).
> *La educación inclusiva* se trata de que los niños con discapacidad aprendan de manera efectiva una vez que están en las escuelas ordinarias (es decir, el enfoque está en la calidad del aprendizaje).

En la educación integrada el niño es visto como el problema. El modelo individual o médico de discapacidad determina que el niño debe ser modificado o rehabilitado para adaptarse al sistema escolar y a la sociedad. Por ejemplo, un estudiante sordo puede usar un audífono y se espera que aprenda a hablar para adaptarse. Sin embargo, no se espera que los educadores y otros estudiantes aprendan lenguaje de señas u otras formas de comunicación. Se espera que un estudiante que presente dificultad de aprendizaje apruebe las pruebas estandarizadas para progresar en la escuela, de lo contrario, repetirá la clase o se verá obligado a abandonar.

La educación inclusiva reconoce que todas las personas son diferentes y que la escuela y el sistema educativo deben cambiar para satisfacer las necesidades individuales de todo el alumnado, con y sin discapacidad. Como ya se ha comentado, un ingrediente clave es la flexibilidad, reconociendo que los niños aprenden a diferentes ritmos y que los maestros necesitan habilidades para apoyar su aprendizaje de una manera suave. En la mayoría de los casos, los estudiantes buscan sólo una enseñanza buena, clara y accesible. Esto incluye el uso de diferentes métodos para responder a las diferentes



necesidades, capacidades y ritmos de desarrollo de los menores.

Hoy, la tendencia predominante en la educación de estudiantes con discapacidad es el modelo de inclusión. Un número cada vez mayor de países reconoce el derecho a participar por igual en la educación general de las personas con discapacidad y adopta la inclusión como tendencia dominante en su política educativa (de Boer, Timmerman, Pijl & Minnaert, 2012)

En los últimos años, Grecia está estudiando la inclusión de niños y niñas con necesidades educativas especiales en el entorno escolar típico. La presencia de educadores especiales en las escuelas inclusivas es imperativa, ya que con

conocimientos especializados y podrán manejar con mayor profesionalidad las situaciones que se presentan a diario en el contexto de la comunidad escolar y pueden inspirar al resto del personal docente para convertirse en actores de la educación y la inclusión. En particular, el papel del equipo directivo de la escuela ha cambiado con respecto a la nueva tarea de garantizar que el entorno educativo sea efectivo y brinde igualdad de oportunidades a todos los estudiantes (Georgiou, Papayianni, Savvides & Pashiardis, 2001)

El concepto de educación inclusiva y su definición radica en la igualdad de trato y educación de los niños con discapacidad a través de su inclusión en entornos escolares ordinarios. El conocimiento y la educación son algo bueno para todas las personas sin importar el grupo social, permitiéndoles evolucionar a un sistema social más equilibrado y sostenible.

Obstáculos a la Educación Inclusiva

Muchos docentes han estado tratando de promover la educación inclusiva en los últimos años; sin embargo, se encuentran con muchas dificultades. A continuación, se mencionan los principales factores que impiden el desarrollo de prácticas de educación inclusiva: Un obstáculo que se encuentra es el currículo, que muchos educandos no pueden seguir. Otro obstáculo es el conocimiento especializado que muchas veces no tienen los propios educadores para apoyar a todos los educandos de manera adecuada. Además, no todos los docentes están bien formados en estos temas, mientras que muchos de ellos sienten incertidumbre sobre la forma de abordar las prácticas mixtas que se implementan en la educación inclusiva. Otro obstáculo que frena la educación inclusiva en las escuelas ordinarias es la actitud de los equipos directivos de las escuelas. Por ejemplo, en ocasiones los directores y gerentes tienen opiniones enfrentadas respecto a los profesores expertos, lo que se traduce en un sentimiento de insatisfacción de estos, afectando su eficacia y calidad.

Es comúnmente aceptado que la diversificación de las necesidades educativas de la población estudiantil es cada vez mayor en los entornos escolares. Por lo tanto, es necesario que los directores de unidades escolares lideren estos procesos, asegurando que todos los estudiantes participen en la educación. La cultura colaborativa, la promoción del desarrollo profesional, la dedicación velando por la igualdad, el respeto a la diversidad son solo algunas de las estrategias con las que los directores contribuyen a la creación de escuelas más inclusivas (Kilgore et al., 2002). Sin embargo, en ocasiones, las percepciones, los conocimientos, las experiencias y las metas del director de la escuela están inhibiendo la implementación de la educación inclusiva. Por lo tanto, es imperativo elegir los líderes escolares inclusivos apropiados (Bell & Stevenson, 2006).

El papel de las TIC en la educación inclusiva para Estudiantes con DI y DC

El conjunto de tecnologías utilizadas para respaldar las tareas típicas de las personas se denominan tecnologías de asistencia. Estas tecnologías son diseñadas para permitir que las personas con discapacidad realicen estas tareas con facilidad. Las tecnologías de asistencia se dividen en alto y bajo nivel tecnológico (high/low-tech). La primera categoría incluye electrónica y software, por ejemplo, teclados especiales para personas con problemas de movilidad. En la segunda categoría, se incluyen principalmente dispositivos mecánicos y eléctricos, como sillas de ruedas, bolígrafos con mangos especiales, papel gofrado con líneas, etc. Cuando se usan con computadoras, las tecnologías de asistencia a veces se denominan software o hardware adaptativo.

Las estrategias adaptativas son técnicas que utilizan las personas con discapacidad para ayudarse a interactuar con sus computadoras u otros dispositivos. Por ejemplo, alguien que no puede ver un sitio web puede utilizar software específico que lea en voz alta el texto de la fuente.

El uso combinado de varias tecnologías de asistencia permite obtener mejores resultados en algunas ocasiones. Algunas soluciones de accesibilidad se crearon dentro de los sistemas operativos más comunes. Tomemos, por ejemplo, la capacidad de cambiar el tamaño de fuente del sistema, o configurar el sistema operativo para que se puedan introducir varios comandos de pulsación de teclas.

TIC para Estudiantes con Discapacidad

Con respecto al crecimiento de las Tecnologías de la Información y la Comunicación y su incorporación en todos los campos de la vida, incluida la educación, se imponen demandas considerables a los educadores y su alumnado con respecto a los métodos de aprendizaje con tecnología moderna. Las potencialidades del uso de las TIC como herramienta posibilitan la aplicación de nuevos métodos de aprendizaje, la mejora y modernización de las técnicas de aprendizaje, encontrando nuevas potencialidades y haciendo más productivo todo el proceso educativo (Colleman 21, 2011).

Las tecnologías modernas facilitan y mejoran la comunicación entre los estudiantes en el proceso de aprendizaje (correo electrónico, páginas web, plataformas de redes sociales, e-learning, etc.). **El e-learning** es otro paso adelante en el área de la autoeducación (Zounek 2009). En e-learning, las TIC se utilizan para formular cursos que brindan acceso en línea a materiales electrónicos y educación autónoma del edificio escolar, autoaprendizaje, comunicación con otras partes interesadas y gestión del estudio.

Las tecnologías modernas juegan un papel fundamental en la educación de los alumnos con necesidades educativas especiales en general. El software diseñado específicamente para estudiantes con discapacidad es una herramienta de aprendizaje muy rentable, mientras que el software para todo tipo de discapacidades generalmente se enfoca en los sentidos individuales: percepción auditiva y visual, orientación en el espacio, refuerzo de la atención y desarrollo de la memoria, así como también ayuda con la educación en caso de problemas con habilidades específicas como la aritmética, la escritura, la adquisición de reglas gramaticales, la lectura, etc. (Zikl, 2011)

Las investigaciones más recientes indican que las Tecnologías de Asistencia se utilizan para impulsar a las personas con discapacidad en muchos campos del proceso de aprendizaje, como lectura, escritura, comunicación, etc. Además, la literatura destaca que el uso de asistencia tecnológica y herramientas en el proceso de aprendizaje tiene efectos positivos, como lo demuestra la bibliografía (Chambers, 1997; Reed, 2004; Reed, 2007; Manning, 2008, Reed, 2009; Day, Dell y Smith, 2011, Jansson, 2008b)

En la educación inclusiva se trata de que todos los alumnos asistan y sean bienvenidos por sus compañeros en las escuelas en clases regulares adecuadas para su edad y se les ofrezca apoyo en el proceso de aprendizaje, contribuyendo y participando en todos los campos de la vida escolar. La educación inclusiva se refiere a la forma en que las personas establecen y diseñan escuelas, aulas, currículos y actividades para que todos los alumnos aprendan juntos y participen en cada actividad. Por todo ello, se está apostando fuerte en herramientas TIC, como herramienta clave para mejorar la equidad en las oportunidades educativas.

Tecnologías de asistencia

Se acepta globalmente que la tecnología brinda a los educadores la oportunidad de proporcionar contenido y material a su alumnado utilizando diversos medios, páginas web, correo electrónico, etc. y ajustarlos de forma natural a las diferentes necesidades de los estudiantes, ya que es fácil actualizarlos y almacenarlos, o agregar referencias para otros materiales en cualquier formato.

El conjunto de tecnologías utilizadas para apoyar las tareas típicas de las personas se llama Tecnologías de Asistencia (AT). Las tecnologías asistidas son los equipos, dispositivos y/o aparatos, y los procedimientos, sistemas y adaptaciones que se realizan al entorno escolar para ofrecer funciones de apoyo y facilidad, utilizados por las personas con discapacidad. Lancioni et al. (2013) sugiere que las tecnologías asistidas son numerosos dispositivos cuyo propósito es ayudar a los estudiantes discapacitados y con dificultades de aprendizaje a funcionar mejor en la vida cotidiana y lograr una mayor calidad de vida.

Estas tecnologías están diseñadas para permitir que las personas con discapacidad realicen tareas cotidianas con facilidad. Las tecnologías de asistencia técnica se dividen

en alto y bajo nivel tecnológico (high/low-tech). La primera categoría incluye electrónica y software, por ejemplo, teclados adaptados para usuarios con problemas motrices. En la segunda categoría (mecánico y eléctrico) algunos de los dispositivos típicos serían sillas de ruedas, bolígrafos especial, papel en relieve con líneas, etc.

Coleman et al. (2011) encontraron que el uso de presentaciones de PowerPoint para enseñar vocabulario parece tener un efecto destacable en alumnado de tercer grado con discapacidad auditiva en la escuela secundaria. Además, Ferreira et al. (2013) estudiaron el impacto positivo que la tecnología de asistencia de los juegos de computadora tuvo en los niños con parálisis cerebral que no podían hablar. El resultado de la encuesta mostró que los niños utilizan los medios de comunicación de sonido o expresiones faciales, proponiendo que las Tecnologías de Asistencia son esenciales para la interacción social.

Las TIC se muestran como una herramienta útil para adaptar los procesos y métodos de aprendizaje a las necesidades de cada alumno, ya se encuentre en desventaja física, psíquica o social frente al resto de la población, es decir, el alumnado con discapacidades cognitivas e intelectuales o estudiantes con problemas de visión. Las adaptaciones para estudiantes con discapacidad se han utilizado a nivel mundial para equilibrar los obstáculos asociados con las dificultades en la lectura, la escritura, el razonamiento matemático y la resolución de problemas (Rotatori y otros, 2014)

Cumley (2009) informa sobre el uso de herramientas y métodos que cubren las necesidades de cada alumno que se enfrenta a una discapacidad física para mejorar sus habilidades de lectura y sugiere las siguientes herramientas y métodos para un aprendizaje exitoso:

- Textos estándar
- Libros accesibles
- Modificaciones de baja tecnología al texto
- Dispositivos de mano para leer cada palabra
- Uso de imágenes/símbolos con textos
- Textos electrónicos
- Textos electrónicos modificados
- Lectores de texto
- Escáner con OCR

Varias ayudas, incluidos procesadores de texto, herramientas y medios que facilitan tareas como sujetar bolígrafos, y software y aplicaciones informáticas están disponibles para ampliar las habilidades de escritura de los estudiantes (Adebisi, Limsan y Longpoe, 2015; Colleman, 2011; Reed, 2004; Reed, 2007; Manning, 2008; Reed, 2009; McCulloch, 2004; Day, Dell y Smith, 2011). Los estudios pueden tener diferentes resultados con respecto al efecto de las tecnologías de asistencia para las habilidades de escritura según el tipo de tecnología de asistencia utilizada. Por ejemplo, según

Peterson-Karlan (2007), diferentes tipos de software informático, como el reconocimiento de voz, la estimación de palabras y la conversión de texto a voz, facilitan resultados exitosos para los estudiantes con dificultades de escritura. Belson, Hartman y Sherman (2013) encontraron que el uso de bolígrafos digitales por parte de personas con dificultades de aprendizaje influyó positivamente en la calidad de la toma de notas, mientras que McCartney Prest, Mirenda y Mercier (2010) indicaron en su estudio sobre el uso de computadoras asistidas por símbolos que se trataba de un software eficaz en la enseñanza de la escritura a personas con síndrome de Down, mejorando su velocidad y calidad de escritura.

Otros estudios confirman que las herramientas TIC, los materiales del curso impresos en Braille, las lupas y el software lector de pantalla deben usarse como tecnologías de asistencia para mejorar las habilidades de lectura de los alumnos, ya que mejoran el proceso de enseñanza-aprendizaje (Adebisi, Limsan y Longpoe, 2015; Colleman, 2011; Reed, Cumley y Walser, 2004; Reed, 2007; Reed, 2009; Manning, 2008; Mahajan, 2014; Reed y Bowser, 2013; McCulloch, 2004; Day, Dell y Smith, 2011).

Los dispositivos deben ser fácilmente comprensibles para los usuarios con una exposición limitada a la tecnología, portátiles (fáciles de mover de un lugar a otro) y fáciles de operar sin una capacitación prolongada ni habilidades complejas. Según las capacidades diferenciales del alumnado y el contexto y la viabilidad del enfoque, las disposiciones de asistencia en la educación pueden ayudar a los alumnos con discapacidad en su aprendizaje. Además, un esfuerzo colaborativo en el uso de dispositivos de asistencia, apoyo en salas de recursos y estrategias educativas innovadoras para promover y mantener la inclusión puede ayudar a estos estudiantes a aprender a la par con sus compañeros sin discapacidad en entornos educativos inclusivos (Ahmad, 2014)

A continuación, se muestra una lista completa de tecnologías de asistencia y estrategias de adaptación descrita por Brewer en 2005:

Teclados alternativos: existen teclados alternativos para dar la oportunidad a los usuarios de personalizar el orden en el que se distribuyen las teclas. Algunos teclados especiales están disponibles comercialmente para personas con discapacidad visual en una o más de las siguientes características de las teclas: más grandes, de colores o con visualización táctil de caracteres Braille.

Monitores Braille: Braille Monitor es un dispositivo de lectura óptica, que se puede conectar a cualquier máquina de cómputo y permite el acceso visual a los textos en Braille en tiempo real (sin producción de documentos o libros Braille). Puede ser utilizado por 6 u 8 pines de bobina (solenoide) y más a menudo proporciona teclas de navegación. Puede ser estable y portátil. Sin embargo, la parte negativa es su elevado coste en la actualidad.

Escáneres: el material impreso del escáner puede leer y pasar a la pantalla de cualquier computadora en forma de imagen cualquier cosa que esté en forma impresa (texto de libros, periódicos, revistas e incluso imágenes, formas). Se utiliza con frecuencia junto con el software de reconocimiento óptico de caracteres.

Lupas de pantalla: software con función de lupa. Al usar este software en la pantalla de la computadora, se amplían todos los elementos de interés para el usuario. Las lupas de pantalla, para aquellos que tienen una capacidad visual limitada, ayuda enormemente. Las lupas de pantalla también cubren las necesidades de las personas daltónicas.

Lectores de pantalla: el lector de pantalla encuentra todos los archivos con formatos de texto (visibles u ocultos) en la interfaz gráfica de usuario (imágenes, botones, menús, cuadros de diálogo, listas, cuadros de mensaje) de una computadora y los envía al sistema de transformación de texto a voz. Además, algunos lectores de pantalla se pueden utilizar en combinación con pantallas Braille. El usuario percibe de forma auditiva y/o visual los textos propios del sistema operativo y la verificación acústica de los caracteres escritos por sí mismo. Hoy en día, los lectores de pantalla están disponibles para computadoras de mano (PDA) y teléfonos móviles, además de en muchos idiomas.

Reconocedores de voz: El sistema de reconocimiento de voz permite ingresar texto hablando en lugar de escribir en computadoras y dispositivos móviles, por ejemplo, smartphones. Estos se distinguen en sistemas de dictado, comandos y sistemas de control.

Tabulación a través de los componentes: la opción de moverse por los componentes con el tabulador es una estrategia adaptativa para usuarios que no pueden usar un mouse. Esta técnica sirve para acceder rápidamente a través de todos los elementos de toda la aplicación de software. Es probable que los usuarios que utilizan lectores de pantalla, como los usuarios ciegos o disléxicos, utilicen esta técnica en combinación.

Conversor de texto a voz: El sistema de conversión de texto a Síntesis de Texto a Voz, es una aplicación de software que entrega cualquier texto en tiempo real (sin pregrabación). Es importante respaldar adecuadamente el idioma solicitado. Actualmente está disponible el software Text-to-Speech Synthesis incluso en teléfonos móviles. Las últimas versiones consiguen un discurso generado bastante realista.

Alarma visual: la alarma visual es una alternativa para usuarios sordos o con dificultades auditivas para recibir una notificación visual de un mensaje de advertencia o error que en otros casos se realizaría con un sonido típico.

En una investigación de Earman-Stetter y Tajero-Hughes (2011), se dedujo que el uso cotidiano de la lectura asistida por computadora tuvo un efecto positivo en las habilidades de comprensión lectora de los alumnos que enfrentan problemas de

aprendizaje. Meyer y Bouck (2014) sugirieron que los alumnos sintieron que leían de una manera más rápida y fluida cuando usaban software de texto a voz. Armstrong y Hughes (2012) notaron que los puntajes de comprensión de lectura de tres de cada cinco estudiantes mejoraron como resultado de las prácticas de lectura de libros de cuentos respaldadas por software de computadora adecuado para las habilidades de lectura de los estudiantes autistas. Más allá, González (2014) afirmó en su estudio sobre 17 estudiantes con dificultades de lectura que lograron contar historias después de someterse a prácticas de lectura de libros electrónicos. Los puntajes previos y posteriores a la práctica de estos estudiantes en las preguntas de comprensión de lectura de opción múltiple parecen no ser diferentes.

TIC y Educación Inclusiva

En cuanto al uso de las herramientas TIC, Msila (2015) trató de investigar los aspectos de los educadores y notó que, aunque muchos docentes tienen disposición y buena voluntad hacia las innovaciones en el proceso de aprendizaje, las Tecnologías de la Información y la Comunicación (TIC) pueden no aportar beneficios sustanciales en el proceso de aprendizaje. Los hallazgos demuestran que el éxito de la tecnología digital en el aula depende de la adecuación del educador y de su postura positiva en el uso de las TIC.

De hecho, el principal foco de la educación inclusiva radica en el hecho de que muchos actores de la educación (docentes, gestores, coordinadores) olvidan que no es el estudiante quien está obligado a adaptarse al entorno escolar, sino la institución que recibe al estudiante con la discapacidad la que deberá pasar por las modificaciones y adaptaciones necesarias para atenderle. Entre esas modificaciones y adaptaciones está la formación de educadores, su capacidad para manejar herramientas TIC y su enfoque pedagógico para involucrar a los estudiantes en alfabetizaciones múltiples.

En el proceso de aprendizaje, las tecnologías de asistencia sugieren varias soluciones para ofrecer a los alumnos un apoyo que cubra todas las necesidades (McKnight y Davies, 2013). El uso de tecnologías de asistencia mejora los logros de los alumnos al ofrecer apoyo, como adaptar el contenido y las actividades de los planes de estudio a las necesidades de los alumnos en un entorno lo menos restringido posible (Wojcik y Douglas, 2012; Parette y Peterson-Karlan, 2007; Parette, Stoner y Watts, 2009). En resumen, las tecnologías de asistencia brindan mejoras no solo en el desempeño práctico, sino también en el éxito educativo de los estudiantes (Edyburn, 2005; Edyburn, 2006; Alnahdi, 2014)

En el proceso de aprendizaje, las necesidades de los individuos que reciben educación especial son muy variadas. Los medios TIC, como las aplicaciones de reconocimiento de voz, los dispositivos móviles, la interacción basada en símbolos y la realidad virtual, ayudan a las personas con diversas necesidades de aprendizaje durante toda su vida académica (McKnight y Davies, 2013).

Douglas, Wojcik y Thompson (2012) encontraron que los teléfonos inteligentes, las computadoras y los dispositivos de Apple, en general, ofrecen 280 aplicaciones cuyo objetivo es ayudar a los estudiantes con discapacidad en su vida cotidiana y propusieron que se estudiara el efecto de estas aplicaciones en el aprendizaje.

Aunque se ha hecho mucho en todo el mundo para aumentar la participación en la educación, el discurso sobre las TIC para el aprendizaje inclusivo todavía se basa en la cantidad de dispositivos proporcionados en los sistemas de educación pública, en lugar de como contribuyen al aprendizaje innovador. Un estudio de Madden (2013) encontró que las prácticas de enseñanza inclusiva permiten que los estudiantes aprendan de formas variadas y a ritmos diferentes. Del mismo modo, las tecnologías móviles ofrecen modelos de aprendizaje personalizados que pueden ser inclusivos para los estudiantes rurales excluidos. Sin embargo, Madden sugiere que se requiere un cambio de paradigma para integrar los dispositivos móviles de manera efectiva en nuevos entornos de aprendizaje que promuevan un enfoque centrado en el estudiante, el aprendizaje colaborativo y la pedagogía constructivista (Madden et al., 2013)

Rojo (2013: p. 8) señala "si los textos contemporáneos han cambiado, las competencias o habilidades lectoras y de producción de textos requeridas para participar en las prácticas alfabetizadoras actuales no pueden ser las mismas". Sin embargo, en el caso del ámbito escolar, estas nociones suelen ser mal comprendidas, con razón. La gente rara vez comprende la diferencia entre la adquisición de la lectura y la alfabetización, y ahora existe la noción de multialfabetización, es decir, la habilidad del estudiante para leer y escribir textos en varios medios, junto con los medios digitales.

Según las investigaciones, las tecnologías variantes, como el ábaco, las hojas de trabajo extendidas y la calculadora de audio, permiten a los estudiantes mejorar sus habilidades matemáticas (Adebisi, Limsan y Longpoe, 2015; Akpan y Beard, 2014; Colleman, 2011; Reed, Cumley y Walser, 2004; Reed, 2007; Manning, 2008; Reed, 2009; McCulloch, 2004; Day, Dell y Smith, 2011). Los resultados relacionados con el aumento de las habilidades en matemáticas de los estudiantes con discapacidad parecen indicar que las tecnologías de asistencia afectan positivamente el éxito de estos estudiantes en el campo de las matemáticas.

Por ejemplo, Bouck et al. (2015) señalaron que el uso de calculadoras en las lecciones de matemáticas afectó positivamente el éxito de los estudiantes con discapacidad (Bouck et al., 2013) en la instrucción de matemáticas a través de audiolibros digitales y software/aplicación de computadora (software ReadHear: texto de audio, determinación de volumen, digital, ampliación, etc.) Además, se encontró que los estudiantes con baja visión mejoraron sus habilidades matemáticas y comprendieron mejor el texto matemático mediante el uso de tecnologías.

Isaila (2014) estudió el efecto del software/aplicación de asistencia para estudiantes con discapacidad visual en comparación con discapacidad cognitiva e intelectual,

destacando que las herramientas tecnológicas de asistencia son herramientas esenciales y la enseñanza asistida por computadora es una estrategia favorable en la docencia. El programa lector de pantalla ofrece a los alumnos con discapacidad visual una ayuda en comparación con las discapacidad cognitivas e intelectuales el acceso a la información en textos escritos en las computadoras (Isaila, 2014). También destacó que el 87,8% de los alumnos que usaron software/aplicación de asistencia en un entorno de educación especial afirmaron un aprendizaje eficiente, atractivo e interactivo, mientras que el 12 % de ellos y ellas indicó que el uso de software de asistencia era monótono.

En general, las herramientas tecnológicas y el equipo especial accesible, como sillas y mesas de tamaño adecuado, sillas variantes, dispositivos para caminar, sillas de ruedas eléctricas o bastones, dispositivos de radiogoniometría, etc. ayudan al alumnado a tener éxito (Reed, 2004; Reed, 2007; Manning, 2008; Reed, 2009; Day, Dell y Smith, 2011; Jansson, 2008b)

Accesibilidad Web

La accesibilidad web se refiere a las pautas que explican cómo hacer que el contenido web sea accesible para personas con discapacidad. Estas pautas están destinadas a todos los desarrolladores de contenido web (escritores de páginas y diseñadores web) y para desarrollar herramientas de creación. El objetivo principal de estas directrices es promover la accesibilidad. No obstante, el cumplimiento de las mismas será un beneficio para todos los usuarios de la web, independientemente del navegador, navegador de voz, teléfono móvil, o cualquier otra restricción (p.ej. entorno ruidoso, o salas de planta baja, en un entorno de manos libres, etc.). El cumplimiento de estas pautas también ayudará a las personas con discapacidad a encontrar información en la web más rápido. Estas pautas no desalientan a los desarrolladores de contenido a usar imágenes, vídeos, etc., sino que explican cómo hacer que el contenido multimedia sea más accesible para una audiencia más amplia.

El W3C[1] es un consorcio de organizaciones, empresas e interesados en general en las tecnologías web. La WAI[2] (Iniciativa de Accesibilidad Web) es una iniciativa dentro del W3C que se ocupa de los problemas de accesibilidad web. Por ello, esta sección del W3C emite informes periódicos e instrucciones relacionadas con el tema de la accesibilidad web.

Los componentes de la accesibilidad web

La accesibilidad web es una situación que involucra todas las características de un sitio web. Los diferentes componentes del sitio web deben estar interconectados y ser interdependientes entre sí para generar un sitio web que sea útil y accesible para el

[1] www.w3.org
[2] www.w3.org/WAI/

beneficio de las personas con necesidades educativas especiales. Estos componentes se refieren a:

Agentes de usuario: Los agentes de usuario son los navegadores web, navegadores de teléfonos móviles, reproductores multimedia, complementos, tecnología de asistencia y otro software que actúa en nombre de un usuario.

Contenido: El contenido comprende la información en una página web o aplicaciones web, como texto, imágenes y sonidos; o el código, script o marcado que designan la estructura, presentación, etc. del sitio web.

Herramientas de autor: Las herramientas de autor se refieren al software que desarrolla sitios web como editores de código, sistemas de gestión de contenido, blogs, etc.

Evaluación: Estas herramientas abordan revisiones relacionadas con la efectividad de las características de accesibilidad y respaldan el seguimiento de los esfuerzos de compensación.

Para que una persona discapacitada acceda a la web, necesita poder usar algunas herramientas de lectura para leer el contenido producido por una herramienta de escritura (quizás para discapacitados). Por lo tanto, hay tres categorías básicas de instrucciones:

- ATAG (Pautas de Accesibilidad de Herramientas de Autor)
- UAAG (Pautas de Accesibilidad del Agente de Usuario)
- WCAG (Pautas de Accesibilidad al Contenido Web)

En el caso de las aplicaciones y el e-learning, las herramientas son el contenido. Es decir, una persona discapacitada puede navegar por la herramienta (que consiste en contenido web, es decir, sitios web). Existe una gran variedad de herramientas de lectura que una persona con discapacidad puede elegir en función de lo que más le convenga. En cuanto a las herramientas de escritura, son necesarias en caso de que alguien con discapacidad quiera producir contenido para la web. Por ello, a continuación, se incluye una referencia con instrucciones para ATAG [3] y UAAG [4].

Niveles de accesibilidad

Las WCAG están acompañadas de un rico material con un análisis aún mayor de cómo y por qué se debe seguir cada instrucción. Además, las WCAG van acompañadas de requisitos de cumplimiento para instrucciones que muestran tres niveles de cumplimiento.

[3] www.w3.org/WAI/standards-guidelines/atag
[4] www.w3.org/WAI/standards-guidelines/uaag

Nivel A: para el nivel A, el contenido debe cumplir con los criterios de cumplimiento mínimos posibles o proporcionar una versión alternativa compatible con el nivel A de la página. Más específicamente, el Nivel A se refiere a los requisitos más esenciales de las características de accesibilidad y es el menor grado posible de accesibilidad que se debe cumplir. Si no se ajusta a este nivel, terminará en un sitio web totalmente inaccesible. Ejemplos de criterios de éxito del Nivel A:

- Todo el contenido que no sea de texto, como audio o vídeo, debe tener un texto alternativo, como texto alternativo o subtítulos, que proporcione los objetivos equivalentes.
- Los visitantes del sitio web pueden navegar de manera eficiente utilizando solo el teclado.
- Si hay audio que se reproduce automáticamente en un sitio web durante más de tres segundos, debe asegurarse que sea factible ajustar el volumen, detenerlo o pausarlo.
- Ofrecer una alternativa (por ejemplo, una pista de audio) para contenido multimedia o de vídeo basado en el tiempo.

Nivel AA: Para el nivel AA, el sitio web debe cumplir con los criterios del nivel A y proporcionar una versión alternativa compatible con el nivel AA de la página web. En particular, el Nivel AA introduce los principales obstáculos de entrada para las personas con discapacidad. Este es el nivel más alto de conformidad que necesitan la mayoría de los sitios web, ya que garantiza que se eliminen los mayores obstáculos de accesibilidad. Ejemplos de criterios de éxito de nivel AA:

- Se ofrecen encabezados descriptivos y etiquetas en el contenido.
- Los elementos de navegación en el sitio web, como los menús, deben estar en una disposición regular y repetida en todo el sitio web.
- Al ejecutar una acción en un sitio web, como llenar formularios o hacer clic en botones, pueden ocurrir errores por parte de los visitantes. En caso de que ocurra un error, también se deben ofrecer sugerencias para su corrección.

Nivel AAA: Para el nivel AAA, el sitio web debe cumplir con todos los criterios de los niveles A, AA y AAA, o proporcionar una alternativa compatible con el nivel AAA. Para el Nivel AAA, el nivel más alto de accesibilidad bajo WCAG y es más difícil de lograr para la mayoría de los sitios web. Lograr este nivel es preferible pero no fundamental. Ejemplos de criterios de éxito de nivel AAA:

- La presentación visual del texto y las imágenes del texto deben tener una relación de contraste de al menos 7:1.
- Elimine las limitaciones de tiempo de todo el contenido, excepto que sea para medios sincronizados no interactivos y eventos en tiempo real.
- Cuando un visitante necesita enviar información en una página web, los envíos deben ser reversibles, verificados en busca de errores de entrada (y

proporcionar sugerencias para la corrección si ocurren errores). Existe un mecanismo de confirmación para permitir que el visitante revise el envío y lo edite si es necesario.

- Las imágenes que contengan texto deben evitarse o usarse solo para decoración.

Sección 508 de los Estados Unidos

Además del W3C, varias otras organizaciones y gobiernos tienen versiones relacionadas con las instrucciones de accesibilidad. Uno de los más conocidos es la Sección 508[5] del Gobierno de los Estados Unidos. Es parte de la Ley de Rehabilitación reformada en 1998. La Sección 508 proporciona una gama de estándares para contenido y equipo digital general (aplicaciones, contenido web, vídeo, computadoras, etc.) en términos de accesibilidad. Con respecto al contenido de la web, las instrucciones se parecen a las instrucciones de las WCAG en varios aspectos, ya que el objetivo es acceder al contenido independientemente del software o AT que un visitante de la web pueda usar. Se dividen en dieciséis reglas [6.]

Sección 504

Otra sección de la Ley de Rehabilitación de 1973 que se refiere a la accesibilidad para discapacitados es la **Sección 504.** La Sección 504 recomienda a las agencias que ofrezcan a las personas discapacitadas igualdad de acceso para unirse a los programas y utilizar los servicios. La ley se aplica a las organizaciones que se ocupan de la financiación federal, como instituciones de educación superior, organizaciones sin fines de lucro, escuelas, hospitales, centros de salud mental, etc. Aunque la Sección 504 no se relaciona particularmente con la accesibilidad web, sí indica que las agencias deben ofrecer ayudas auxiliares, como braille, contenido con letra ampliada, subtítulos de vídeo, etc. para que la información sea accesible para las personas con discapacidad.

En la actualización de 2018 de la Sección 508, todo el contenido electrónico, como contenido web, software, etc., debe cumplir con WCAG 2.0 nivel A y AA (obtenido el 2/2021 de: https://monsido.com/platform/web-accessibility /sección-508).

Accesibilidad de Documentos

A continuación, se mencionan las pautas relativas a la accesibilidad de los documentos:

Encabezados: es importante usar estilos y resaltados para dar formato a los encabezados de un documento. Los encabezados serán breves y concisos, así como en el orden correcto. Una tabla de contenido es algo que se puede crear muy fácilmente y hace que el documento sea más fácil de leer. Los lectores de pantalla pueden facilitar la

[5]https://www.section508.gov/
[6]https://www.section508.gov/manage/laws-and-policies

navegación al contenido del documento y, en consecuencia, a todo el documento reconociendo los encabezados.

Párrafos: otro elemento que hace que un documento sea más accesible para las personas con discapacidad son los párrafos. Asimismo, en los Títulos, los párrafos también deberán estar correctamente estilizados. Las líneas en blanco entre párrafos o capítulos deben evitarse o no reemplazarse por espacios de línea (¡los usuarios ciegos que escuchan líneas en blanco pueden pensar que el texto ha terminado!). Es importante utilizar el estilo para cambiar la distancia entre párrafos y títulos. La consistencia en la presentación visual del documento ayuda a facilitar la lectura. Finalmente, se deben evitar malentendidos como "fin de documento" porque los lectores de pantalla confunden a los usuarios.

Texto alternativo: se debe insertar texto alternativo en las imágenes y tablas, siempre que sea preciso y ofrezca información representativa. Además, el texto alternativo debe ser completo y sin expresiones como "imagen de un…". Al hacerlo, las personas con discapacidad visual entienden el contenido que de otro modo no podrían entender imágenes, imágenes prediseñadas, diagramas, pinturas, etc.

Tablas: las tablas deben estar estructuradas de manera que faciliten la navegación. Para lograrlo, evite en la medida de lo posible tablas dentro de tablas, fusiones y divisiones de celdas. En su lugar, utilice el orden de lectura de pestañas, encabezados y columnas. Además, una vez más se deben evitar las líneas en blanco. Una presentación visual coherente para facilitar la lectura facilita la navegación de los usuarios de lectores de pantalla.

Otros problemas de accesibilidad de documentos: algunos otros problemas que aumentan la accesibilidad de un documento son los hipervínculos que deben ofrecer una descripción clara del destino. Es decir, no usar la dirección de destino o frases como "Más", "Haga clic aquí", etc. Finalmente, se deben evitar los hidrogramas. Sin embargo, si es necesario un hidrograma, asegúrese de proporcionar la información y en otra parte del documento.

Comprobar el contenido accesible

Contraste de color: Si no hay suficiente contraste en tono y brillo entre el color del fondo y los elementos de primer plano, muchas personas con problemas de visión pueden tener problemas para leer el texto. Es muy importante no confiar solamente en el color cuando se desea resaltar un contenido o información importante. Debe también ser diferente del resto del texto en formato, por ejemplo, en negrita o subrayado. A continuación, se presenta la forma en que los colores del arco iris son percibidos por distintas personas:


Alguien sin problemas de visión.


Alguien con protanopía[7]


Alguien con deuteranopía[8]


Alguien con tritanopía [9]

La forma en que un individuo percibe los colores del arco iris.

Una fácil manera de comprobar la diferencia de matiz y brillo de los colores entre los elementos que están en el primer plano y el fondo es usar la herramienta *Contraste Jonathan Snooks Color Contrast Check11* [10]. Otra herramienta similar es *Color Contrast Analyser12 de Gez Lemon* [11]. Ambas herramientas utilizan un algoritmo para calcular la transparencia del color.

También se puede cambiar la pantalla en escala de grises o monocromática, asegurándose de que el texto siga siendo legible. Utilizando el sistema operativo Mac OS X14 existe un gran potencial para este tema de **Universal Access,** que permite al usuario experimentar con los colores de la pantalla.

Título del documento: El título de un documento es importante por muchas razones. En la mayoría de las veces, es lo primero que presentará una Tecnología de Asistencia. Además de esto, se muestra en la barra de título de la ventana y durante la impresión de un documento. Los títulos descriptivos de los documentos son muy útiles para todos. Por lo tanto, es importante verificar que cada documento tenga un título único y descriptivo. Aun así, el título no debe usar demasiados símbolos de puntuación. No hay

[7] http://www-student.unl.edu/~impair/protanopia.html
[8] http://www-student.unl.edu/~impair/protanopia.html
[9] http://www-student.unl.edu/~impair/protanopia.html
[10] http://www.snook.ca/technical/colour_contrast/colour.html
[11] http://juicystudio.com/services/colourcontrast.php

un conjunto de reglas sobre qué caracteres se usan como separadores en el título, sin embargo, los títulos de los documentos no deben contener puntuación utilizada con fines decorativos, como ":: Título ::" o ".. == Título == ...". Los lectores de pantalla leen cualquier carácter de puntuación, lo que puede ser agotador o confuso.

Tablas de datos: las tablas no deben usarse para el diseño, los datos incluidos en las tablas deben marcarse adecuadamente para usar el acceso disponible que mejora los elementos y atributos. Cuando las tablas se utilizan para etiquetar los elementos, representan solo un diseño. Los usuarios habituales pueden hacerse una idea de la relación entre el encabezado y los datos de la tabla. Sin embargo, las personas con problemas de visión, graves o no, en general no pueden hacer esto. Para que una tabla sea accesible a las personas que usan lectores de pantalla u otra tecnología de asistencia, debe presentar el contenido original de la tabla, antes de la presentación de los datos en la tabla.

Programa de lectura de pantalla: experimentar cómo se presenta el contenido a alguien que no puede ver ayuda a identificar varias áreas problemáticas. Si el usuario tiene vista completa, es muy difícil imaginar cómo usar una aplicación de software sin ver. Los lectores de pantalla de uso más frecuente son:

- MANDÍBULAS [12];
- Ventana-Ojos [13;]
- Supernova [14;]
- Lector de páginas de inicio de IBM [15.]

Contenido accesible: si la aplicación de software se evaluó y pasó todos los puntos de control mencionados anteriormente, es bastante seguro asumir que la aplicación es accesible para personas con discapacidad. Lamentablemente, esto no significa necesariamente que el contenido sea comprensible para todos. Debe tenerse en cuenta que el código de script torpe e incoherente no puede ser entendido incluso por personas muy inteligentes, por lo tanto, la creación y presentación de contenido que sea realmente accesible para todos puede ser un asunto complicado. Obviamente, comprender el contenido de una aplicación de software puede ser aún más problemático para personas con algún tipo de deterioro cognitivo o dificultad de aprendizaje (Hudson, Weakley y Firminger, 2005).

Los errores más comunes en la implementación de la accesibilidad

No usar texto alternativo detallado: Los desarrolladores de contenido a menudo colocan muchos textos alternativos (alt-alternative text) en las imágenes, asumiendo que esto

[12] http :// www . libertad científica . com / fs_products / JAWS_HQ . _ _ _ _ asp # Descargas
[13] http :// www . gwmicro . com / Ventana - Ojos / Demostración
[14] http :// www . acceso a la computadora delfín . com / descargas / índice . áspid
[15] http :// www -3. ibm _ com / able / dwnlds / hpr 4 versión de prueba . html

ayudará a los lectores de pantalla. Lo cierto es que el texto alternativo debe ser **breve** y **conciso** y no debe contener más información de la necesaria para comprender lo que se muestra en la imagen. Las imágenes que actúan simplemente como elementos decorativos de la aplicación, sin ninguna funcionalidad, no deben contener texto alternativo o tener el siguiente formato: alt = "", para que los lectores de pantalla las ignoren. La introducción del texto alternativo que no tiene ningún valor solo será más difícil y cansará más a los usuarios que utilizan lectores de pantalla.

Uso de formularios no accesibles: En caso de utilizar formularios de comunicación, o cualquier tipo de campo de entrada en una página web, uno debe asegurarse de que sean accesibles para todos proporcionando un etiquetado claro. En caso de no utilizar un elemento <label> en el código de cada campo, por ejemplo, los visitantes que utilicen lectores de pantalla o entrada de voz tendrán problemas para navegar en el formulario. Además, debe evitarse colocar etiquetas dentro del campo de entrada y también colocar etiquetas directamente sobre sus respectivos campos.

No usar claves de acceso: Hay algunas combinaciones de teclas que se utilizan de forma predeterminada para algunas funciones. Por ejemplo, la combinación de las teclas ALT + MAYÚS IZQUIERDA + IMPRIMIR PANTALLA cambia el contraste de color de la pantalla ayudando a las personas con problemas de visión a leer la información con mayor facilidad. Sin embargo, el uso de las teclas de acceso debe usarse con cautela para evitar confusiones con las funciones de las teclas de acceso directo, es decir, aquellas asociadas con los lectores de pantalla.

No usar resumen de tabla: El resumen de la tabla es un resumen de toda la tabla. Los lectores de pantalla leen primero la tabla de resumen y luego pasan al contenido de la tabla. Incluso con tablas de datos, una tabla de resumen solo es necesaria si no hay información suficiente.

Olvidar el contenido: La forma en que se construye el contenido de una aplicación de software es una gran parte de la accesibilidad. Una aplicación de software puede estar perfectamente codificada y cumplir con los más altos estándares de codificación, pero, si el contenido está mal estructurado, solo dará la sensación de que la navegación por la aplicación es bastante difícil o imposible para los usuarios con algún tipo de discapacidad.

Contraste de color insuficiente. Para las personas con discapacidades visuales, el contraste de color inadecuado entre el color de fondo y el color del texto puede dificultar la lectura del contenido de un sitio web. La relación de contraste recomendada difiere según el tamaño del texto. Por lo tanto, se recomienda utilizar un verificador de contraste de color para evaluar si los colores del sitio web están dentro de la proporción correcta.

Usar una estructura de encabezado HTML incorrecta: La estructura de página en formato HTML es significativa para los visitantes que utilizan lectores de pantalla para acceder a los contenidos de un sitio web. La estructura de encabezados imprecisa hace que el contenido no esté organizado y sea muy complejo de navegar. Por ejemplo, utilice la función de negrita para el texto, en lugar de la clasificación de títulos adecuada. Los encabezados deben estar anidados con el encabezado más esencial que tenga el rango 1 (<h1>) con los subtítulos procediendo en orden.

Atributos de WAI-ARIA que faltan: La Iniciativa de Accesibilidad Web – Aplicaciones Enriquecidas de Internet Accesibles (WAI-ARIA) es un requisito técnico aplicado por los desarrolladores web para crear contenido web interactivo accesible. El contenido interactivo contiene funciones como arrastrar y soltar, acordeones o controles deslizantes. Sin embargo, este tipo de contenido interactivo no puede interferir con los usuarios que dependen de lectores de pantalla o instrucciones de voz si no se implementan correctamente.

Uso de hipervínculos sin alternativas de texto: Los hipervínculos en un sitio web deben incluir texto sin formato descriptivo en el código fuente. En caso de imágenes enlazadas, el texto alternativo de la imagen deberá indicar el destino del hipervínculo. Dado que las URL no siempre son descriptivas de su destino, es esencial que contengan una breve alternativa de texto que permita a los visitantes del lector de pantalla saber hacia dónde se dirigen al hacer clic en el hipervínculo. Esto es particularmente útil si el usuario está buscando información concreta en un sitio web.

Objetivos

El propósito de este estudio es examinar qué tan familiarizados están los educadores con el uso de herramientas TIC durante el proceso de aprendizaje de los estudiantes con discapacidad, tanto en el entorno escolar especial como en el ordinario, en Grecia. Más específicamente, definir puntos de vista y sentimientos sobre los beneficios del uso de herramientas TIC para estudiantes con discapacidad visual, auditiva y del habla, discapacidad intelectual y cognitiva, así como deficiencias físicas. Por último, investigar cuánto conocen los educadores los problemas de accesibilidad web, aplicando pruebas de accesibilidad y qué tan capaces son los educadores para crear contenido web y no web comprensible y navegable, accesible para personas con discapacidad.

Método

Esta investigación se llevó a cabo utilizando un paradigma cuantitativo, un diseño descriptivo y correlacional, así como análisis comparativo y de regresión. Atendiendo a los objetivos propuestos, en el trabajo se intentó responder a las siguientes preguntas:

- ¿Qué tan familiarizados están los educadores con el uso de herramientas TIC durante el proceso de aprendizaje de los estudiantes con discapacidad, tanto en el entorno escolar especial como en el ordinario, en Grecia?
- ¿Cuáles son las opiniones y los sentimientos de los educadores con respecto al uso de herramientas TIC para estudiantes con discapacidad visual, auditiva y del habla, discapacidad intelectual y cognitiva, así como deficiencias físicas?
- ¿Cuánto saben los educadores de los problemas de accesibilidad web, de aplicar pruebas de accesibilidad y qué tan capaces son los educadores de crear contenido web y no web comprensible y navegable?

La **hipótesis de trabajo** generada como resultado de los objetivos anteriores y de investigaciones previas es que los educadores utilizan en gran medida las herramientas TIC para apoyar el proceso de aprendizaje de los estudiantes con todo tipo de discapacidad. Sin embargo, no todos los docentes están especializados en todo tipo de discapacidades. Por ejemplo, algunos formadores están más especializados en discapacidades visuales, mientras que otros lo están en discapacidades auditivas.

Muestra

La muestra estuvo compuesta por 210 personas, ya que se intentó que fuera lo más representativa posible de la población total que trabajaba en escuelas públicas en Grecia. Más específicamente, profesores de educación primaria y secundaria, así como asistentes especiales y personal educativo especial que ofrecen servicios en escuelas públicas tanto en grandes centros urbanos, como Atenas y Tesalónica, como en áreas rurales (Serres, Kavala, Xanthi, etc.) e islas (Ikaria, Lemnos, Creta, etc.).

Del total de participantes (N = 210) 120 (57,12%) eran mujeres y 90 (42,9%) hombres. La edad media de los participantes se estimó entre 36 y 45 (media = 3,54) años y la desviación estándar se estimó en 1,58. El mayor porcentaje de individuos (22,9%, n = 48) eran "educadores de informática", seguidos de "filólogos" (14,3%, n = 30) y "matemáticos" (11,4%, n = 24). En cuanto a la composición de la muestra respecto al nivel educativo, el 85,7% (n = 180) poseía una titulación adicional a la básica (otra licenciatura, posgrado, doctorado). En particular, 54 individuos de la muestra manifestaron tener un título de otro campo científico, casi todos han cursado un posgrado mientras que solo 12 cuentan con un doctorado. Respecto a la formación en nuevas tecnologías el 42,9% (n=190) de los participantes fueron autodidactas, el 22,9% (n=48) asistieron a una formación de tres a seis meses, el 20% (n=42) asistieron a formación de corta duración y solo el 14,3% (n = 30) asistieron a la capacitación anual. En cuanto al tipo de empleo, el 80% (n=168) eran de tiempo completo con contrato de Derecho Público, el 11,4% (n=24) eran de tiempo completo con contrato de Derecho Privado, el 5,7% (n=12) eran a tiempo parcial con contrato de Derecho Privado y sólo el 2,9% (n = 6) eran remunerados por hora con contrato de Derecho Privado.

El promedio de años de experiencia docente de los participantes se calculó de 11 a 15 años (media = 3,09) años y la desviación estándar se calculó igual a 1,86. El promedio

de años de experiencia docente en Educación Especial de los participantes se calculó de 6 a 10 años (media = 2,40) años y la desviación estándar se calculó igual a 1,40. Finalmente, el promedio de la población estudiantil de la unidad escolar que atienden los participantes es igual a 118 alumnos y la desviación estándar se calculó igual a 102.

Instrumento

Se realizó un análisis preliminar para la identificación y focalización de la investigación. Los criterios clave seleccionados definieron los parámetros básicos del procedimiento de muestreo para la realización de la investigación. Durante este paso, se llevó a cabo una investigación basada en cómo los educadores utilizan las herramientas TIC durante el proceso de aprendizaje y si los educadores conocen los problemas de accesibilidad.

En base a los resultados de la fase inicial, se realizó una encuesta basada en un cuestionario estructurado especializado. El cuestionario se diseñó en línea y se envió por correo electrónico a los maestros de educación primaria y secundaria, así como a los asistentes especiales y al personal educativo especial (por ejemplo, psicólogo, logopeda, fisioterapeuta). Además, el cuestionario en particular se conectó con una base de datos en línea para que los resultados fueran guardados de inmediato, simplemente presionando el botón "enviar" en formato de Excel. El objetivo de dicho cuestionario era obtener respuestas actualizadas en relación con el estado actual del uso de las herramientas TIC y los problemas de accesibilidad en Grecia por parte de los educadores. La encuesta se realizó durante el año escolar 2018/2019. Más concretamente, el cuestionario se divide en dos grupos de preguntas. El primer grupo de preguntas se refiere a los datos demográficos de cada individuo y está compuesto por 9 preguntas. Esos son:

- Género
- Años
- Especialidad del educador
- Otros estudios a los que pueda asistir
- Si él o ella asistió a una formación en TIC
- El puesto de servicio que ocupa
- Años de experiencia docente
- Años de experiencia docente en educación especial
- El tamaño de la unidad escolar (cuántos estudiantes asisten a su unidad escolar)

De acuerdo al marco teórico, se ha encontrado que estas variables constituyen un factor significativo respecto a su actitud hacia la adopción de herramientas TIC y el desarrollo de contenidos accesibles.

La segunda parte del cuestionario es la parte principal de la encuesta que se refiere a los aspectos de todas las partes interesadas de la educación especial en función del uso de las herramientas TIC y los problemas de accesibilidad. Esta parte del cuestionario contiene 41 preguntas.

Los datos registrados en el cuestionario se extraían periódicamente para ser procesados a través de un software especial. En particular, el software utilizado para el procesamiento de los datos seleccionados fue IBM SPSS Statistics 20.0. Para verificar si el instrumento continuaba manteniendo los resultados de confiabilidad y validez del original se aplicaron varios procedimientos estadísticos. Se realizó un análisis **descriptivo,** incluyendo frecuencias, media, desviación estándar y porcentajes, así como un estudio **inferencial**, **correlacional** y de **regresión**.

Resultados

Estudio Descriptivo

La escala de Likert [16] utiliza respuestas de cuestionarios estandarizados para determinar la intensidad relativa de diferentes ítems. En la segunda parte del instrumento se miden los aspectos individuales de autoevaluación de conocimientos, habilidades y destrezas de los educadores con una escala tipo Likert de 5 puntos, desde 1 = "muy en desacuerdo" hasta 5 = "muy de acuerdo". Las variables dependientes de la investigación se definen como las 41 preguntas de autoevaluación realizadas a los docentes.

A las preguntas que hacen referencia a si los participantes tienen conocimientos generales sobre las posibilidades que ofrecen las TIC al alumnado con necesidades educativas especiales, la mayoría de la muestra respondió afirmativamente, mientras que solo 30 (14,3%) de 210 participantes respondieron negativamente y 12 (5,7%) de 210 se sienten indecisos. Asimismo, a la pregunta de si los participantes son conscientes de las dificultades que surgen por los diferentes tipos de discapacidad en el uso de las TIC, la mayoría respondió afirmativamente y solo 24 (11,4%) de 210 participantes respondieron negativamente, mientras que 12 (5,7%) de 210 participantes se sienten indeciso. La mayoría de la muestra (77,1%) afirma saber elegir herramientas TIC específicas en función de las características físicas, sensoriales y cognitivas de cada alumno, así como la gran mayoría de la muestra (80%) afirma conocer prácticas de formación TIC para alumnado con diferente tipo de discapacidad.

Sin embargo, a la pregunta de si los participantes conocen aplicaciones que son compatibles con los teléfonos móviles de tecnología moderna y las relacionan con prácticas educativas para estudiantes con discapacidad, 60 (28,6 %) de 210

[16]Rensis Likert (1903-1981): Metodóloga, estadística, psicóloga social, cofundadora del Instituto de Investigaciones Sociales de la Universidad de Michigan, el más importante del mundo en su género.

participantes respondieron negativamente y 144 (68,6 %) de 210 participantes se sienten seguros usando tecnología de telefonía móvil en las prácticas educativas.

En cuanto a las preguntas sobre si los participantes pueden encontrar en Internet material educativo para estudiantes con discapacidad y si se sienten seguros de ayudar a los estudiantes con discapacidad a beneficiarse del uso de las TIC, la mayoría respondió afirmativamente en ambas preguntas (88,5% y 80% respectivamente). Adicionalmente, la mayoría de la muestra (77,2%) manifestó que sabe diseñar actividades con software educativo para alumnado con necesidades educativas especiales.

En concreto, respecto a las discapacidades visuales, parece que la mayoría de los participantes están familiarizados con las herramientas utilizadas por las personas con discapacidad visual, ya que el 82,9% de los participantes pueden explicar las posibilidades que ofrece la máquina de escribir braille, el 71,4% de la muestra conocen las posibilidades que ofrecen los lectores de pantalla, el 68% de los participantes afirman conocer diferentes tipos de equipos conectados a la computadora y utilizados por los estudiantes que se enfrentan a problemas visuales y finalmente el 62,8% de la muestra está familiarizado con varias aplicaciones de ampliación de pantalla (por ejemplo, JAWS).

Adicionalmente, el 71,5% de la muestra es capaz de diseñar material didáctico en Word Editor, eliminando aspectos que son difíciles para los estudiantes con discapacidad visual, el 77,1% de los participantes conoce sitios web con material educativo para estudiantes con discapacidad visual, el 80% de la muestra conoce las posibilidades que ofrecen las TIC al alumnado con problemas de visión. Sin embargo, el 25,8% de la muestra manifestó no conocer navegadores específicos para personas con discapacidad visual y el 20% de los participantes afirmó no ser capaz de aplicar estrategias didácticas y adaptaciones de programas apoyadas en las TIC para facilitar a los alumnos y alumnas con discapacidad visual.

En cuanto a las discapacidades auditivas, 114 de 210 participantes manifestaron conocer el lenguaje de señas, menos de la mitad de la muestra (48,6%) están familiarizados con diversos programas de capacitación informática que se utilizan para mejorar el habla oral y escrita, mientras que el 48,5% de la muestra es capaz de aplicar estrategias didácticas basadas en las TIC para facilitar la integración del alumnado con discapacidad auditiva y conocer diferentes programas de reeducación del habla. No obstante, el 62,9% de la población encuestada conoce sitios web con material educativo para alumnado con problemas auditivos y el 51,4% de la muestra conoce las posibilidades que ofrecen las TIC a las personas con problemas auditivos.

En cuanto a los problemas de movilidad, el 82,9% de los encuestados reconoce diferentes tipos de teclados para estudiantes con problemas de movilidad, mientras que solo 30 de 210 participantes respondieron negativamente. Asimismo, la mayoría de la

muestra tiene conocimiento de programas informáticos que controlan la computadora con comando de voz frente al 25,8% que manifestó no tener conocimiento de esto. La gran mayoría de la muestra (80%) se siente segura al usar material educativo y capaz de implementar estrategias didácticas basadas en las TIC para facilitar la integración de los estudiantes con problemas de movilidad. Finalmente, el 80% de la muestra comprende las posibilidades que ofrecen las herramientas TIC a los alumnos con este tipo de discapacidad.

En cuanto a las habilidades cognitivas, nuevamente la mayoría de la muestra (74,3%) se siente segura al usar programas educativos, mientras que solo 42 de 210 participantes se declaran inseguras y 12 de 210 participantes se declaran indecisas. Adicionalmente, la mayoría (82,9%) afirmó conocer varios sitios web con material educativo para estudiantes con discapacidad cognitiva y el 74,2% de la muestra se siente capaz de implementar estrategias didácticas utilizando herramientas TIC para facilitar la integración de estudiantes con discapacidad cognitiva y el 74,3% % de los encuestados se siente seguro de hacer ajustes a los planes de estudios apoyados en herramientas TIC, abordando las discapacidades cognitivas.

Por otra parte, la gran mayoría de la muestra (85,7%) afirmó conocer varios sitios web con material educativo para estudiantes con discapacidad cognitiva, mientras que solo 30 (14,3%) de 210 encuestados mencionaron que desconocen las posibilidades que ofrecen las herramientas TIC para estudiantes con las discapacidades anteriores y solo 12 (5,7%) de 210 encuestados se sienten indecisos. Por último, el 62,9% de la muestra afirma conocer las posibilidades que ofrecen los sistemas operativos, haciendo más accesible el entorno laboral a los alumnos con discapacidad cognitiva. Finalmente, solo el 48,5% de los encuestados son capaces de adaptar una computadora, incluidos los periféricos, a la necesidad educativa de cada estudiante.

En cuanto a los temas de accesibilidad, los resultados fueron más sorprendentes. En la primera pregunta sobre las pruebas de accesibilidad del sitio web, el 37,1% de la muestra afirmó que no sabe qué es la prueba de accesibilidad en comparación con el 48,6% de la muestra que afirmó saber suficiente de este tema. Además, solo 90 (42,9%) de 210 participantes están familiarizados con las pautas generales de accesibilidad del sitio web WAI/W3C.

Finalmente, los resultados de la investigación revelaron que casi la mitad de la muestra (51,4%) no es capaz de crear sitios web con un alto parámetro de accesibilidad, mientras que 24 (11,4%) de 210 participantes se declararon indecisos. Además de esto, solo el 40% de la muestra es capaz de mencionar varias pruebas de accesibilidad y solo el 42,9% de los encuestados admitió conocer varias instituciones relacionadas con el estudio e investigación de la accesibilidad web.

Estudio inferencial (T-TEST)

El resultado del análisis de la prueba T se muestra en dos tablas. En la primera, "Estadísticas de grupo", se muestran indicadores estadísticos descriptivos: el tamaño N de cada grupo, la media (Mean), la desviación estándar (Std. Deviation) y el error estándar de las medias (Std. Error Media). La segunda tabla muestra la *prueba T*, de la siguiente manera: se calculan dos valores, un valor t en caso de que las muestras sean homogéneas (Varianzas iguales asumidas) y un valor t en caso de que las muestras no sean homogéneas (Varianzas iguales no ficticio). La homogeneidad de la dispersión entre las muestras comparadas se comprueba con la prueba de Levene. Si el valor F de la prueba de Levene es **estadísticamente significativo** (< 0,50) significa que las muestras no son homogéneas. Además del valor t, se dan los grados de libertad (df), el nivel de significación estadística (Sig.), la diferencia entre las medias (Mean Difference), el error estándar de la diferencia de medias (Std. Error Difference) y los límites del intervalo de confianza de la diferencia de medias (95% Intervalo de Confianza de la Diferencia).

Los resultados de la prueba T para todas las variables mostraron que solo **7 de las 41 están significativamente asociadas al género**.

Estadísticas del grupo

	Sexo	N	Media	Std. Deviation	Std. Error Mean
6. Considero que puedo encontrar en Internet material educativo para personas con necesidades educativas especiales.	Hombre	90	3.93	1.130	.119
	Mujer	120	4.35	.479	.044

Análisis T-Test basado en el hallazgo de género en material educativo de Internet para alumnos con necesidades educativas especiales.

Test de muestras independientes		
	Prueba de Levene para la igualdad de varianzas	*Prueba t para la igualdad de medias*

		F	Sig	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of th Difference Lower	Uppe
6. Considero que puedo encontrar en Internet material educativo para estudiantes con necesidades educativas especiales.	Se asumen varianzas iguales	48.193	.000	-3.631	208	.000	-.417	.115	-.643	-.190
	Varianzas iguales no ficticio			-3.284	113.075	.001	-.417	.127	-.668	-.165

Análisis T-Test basado en el género de si los participantes se consideran capaces de localizar material educativo para alumnos con necesidades educativas especiales en Internet.

La prueba de las medias con el criterio t para muestras independientes mostró que la cuestión de si los participantes se consideran capaces de localizar material educativo para alumnado con necesidades educativas especiales en Internet está significativamente relacionada con el género. En particular, las mujeres (M = 4,35, SD = 0,48) tienen más probabilidades que los hombres de encontrar materiales educativos en línea para estudiantes con necesidades educativas especiales (M = 3,93, SD = 1130), t (113,07) = -3,29, p = 0,001.

El control de las medias con el criterio t para muestras independientes mostró que en la pregunta si los participantes saben qué son las pruebas de accesibilidad para sitios web, se relaciona significativamente con el género. En particular, los hombres (M = 3,40, SD = 1,09) saben más sobre qué pruebas de accesibilidad son más adecuadas para sitios web que las mujeres (M = 2,60, SD = 1,25), t (203,11) = 4,95, p = 0,00001.

El control de las medias con el criterio t para muestras independientes mostró que la pregunta sobre si los participantes conocen las pautas generales WAI/W3C para la accesibilidad de los sitios web **está significativamente relacionada con el género.** En particular, los hombres (M = 3,20, SD = 1,11) están más familiarizados con las pautas

generales WAI/W3C para la accesibilidad de sitios web que las mujeres (M = 2,50, SD = 1, 29), t (203,85) = 4,21, p = 0,00001.

El control de las medias con el criterio t para muestras independientes mostró que la cuestión de si los participantes son capaces de crear sitios web con altos parámetros de accesibilidad **está significativamente relacionada con el género.** En particular, los hombres (M = 3,20, SD = 1,11) están más familiarizados con la creación de sitios web con altos parámetros de accesibilidad que las mujeres (M = 2,20, SD = 1,21), t (208) = 6,12, p = 0,00001.

El control de las medias por el criterio t para muestras independientes mostró que la cuestión de si los participantes son capaces de adaptar un ordenador, incluidos los periféricos, a las necesidades educativas de todos **está significativamente relacionada con el género.** En particular, los hombres (M = 3,40, SD = 1,15) afirman poder adaptar más fácilmente una computadora, incluidos los periféricos, a las necesidades educativas de cada estudiante que las mujeres (M = 2,65, SD = 1,46), t (207,55) = 4,16, p = 0,00001.

El control de las medias por el criterio t para muestras independientes mostró que la cuestión de si los participantes conocen diferentes instituciones relacionadas con el estudio e investigación de la accesibilidad de los sitios web **está significativamente relacionada con el género.** En particular, los hombres encuestados (M = 3,33, DT = 1,25) aseguran conocer más que las mujeres sobre las diversas instituciones relacionadas con el estudio e investigación de la accesibilidad web (M = 2,40, DT = 1,32), t (208) = 5,17, p = 0,00001.

El control de las medias por el criterio t para muestras independientes mostró que la cuestión de si los participantes son capaces de reportar diferentes pruebas de accesibilidad **está significativamente relacionada con el género.** En particular, los hombres (M = 3,13, SD = 1,21) pueden reportar varias pruebas de accesibilidad de mujeres (M = 2,65, SD = 1,50), t (206,83) = 2,58, p = 0,01.

El resto de variables para las que el control de medias con el criterio t para muestras independientes mostró que no se **relacionan significativamente con el género** son las siguientes: conocimiento general sobre las posibilidades que ofrecen las TIC al alumnado con necesidades educativas especiales (p = 0,58 > 0,05), conocer las dificultades que generan los diferentes tipos de discapacidad en el uso de las TIC (p = 0,54 > 0,05), conocer la forma en que se eligen determinadas herramientas TIC en función de las características físicas, sensoriales y cognitivas de cada alumno (p = 0,56> 0,05), conozco prácticas de formación en TIC para estudiantes con diferentes tipos de discapacidad (p = 0,68> 0,05), conozco aplicaciones móviles de teléfonos con tecnología moderna y me preocupan las prácticas educativas en educación especial (p = 0,15> 0,05), me siento preparado para ayudar a un alumno con necesidades educativas especiales a beneficiarse del uso de las TIC (p = 0,83 > 0, 05), sé diseñar actividades

con software educativo para alumnos con necesidades educativas especiales necesidades (p = 0,39 > 0,05), soy capaz de explicar las posibilidades que ofrece una máquina de escribir braille para alumnos con discapacidad visual y discapacidad cognitiva (p = 0,10 > 0,05), conozco las posibilidades que ofrecen los lectores de pantalla para personas con discapacidad visual y discapacitados cognitivos (p = 0,16> 0,05), conozco diferentes tipos de equipos conectados a la computadora y utilizados por estudiantes con deficiencias visuales y discapacidades cognitivas (p = 0,09> 0,05), conozco varios software de ampliación de pantalla como JAWS, utilizados por alumnos con discapacidad visual y discapacidad cognitiva (p = 0,052 > 0,05), puedo diseñar materiales didácticos en Word Editor, eliminando los aspectos que dificultan a los alumnos con discapacidad visual y discapacidad cognitiva (p = 0,21 > 0,05), conozco navegadores específicos para alumnado con problemas de visión y discapacidades cognitivas (p = 0,48 > 0,05), conozco sitios web con material educativo para alumnos con problemas de visión y discapacidades cognitivas (p = 0,60 > 0,05), me siento capaz de aplicar estrategias didácticas y adaptaciones de programas de estudios apoyados en las TIC para facilitar la inclusión de alumnos con problemas de visión y discapacidades cognitivas (p = 0,60 > 0,05), conozco las posibilidades que ofrecen las TIC a los alumnos con discapacidad visual y discapacidad cognitiva (p = 0,53 > 0,05), conozco la lengua de signos (p = 0,34 > 0,05), conozco diversos programas de formación informática que utilizo para potenciar el habla oral y escrita (p = 0,09 > 0,05), conozco varios sitios web con material educativo para alumnos con problemas auditivos y discapacidades cognitivas (p = 0,38 > 0,05), soy capaz de aplicar estrategias didácticas basadas en las TIC herramientas para facilitar la integración de alumnos con problemas auditivos (p = 0,14 > 0,05), conozco las posibilidades que ofrecen las TIC a alumnos con problemas auditivos y discapacidades cognitivas (p = 0,74 > 0,05), conozco diferentes programas de readaptación del habla (p = 0,10> 0,05), conozco diferentes tipos de teclados para estudiantes con problemas de movilidad (p = 0,09> 0,05), conozco software que controla la computadora con comando de voz (p = 0,43> 0,05), conozco material educativo para estudiantes con problemas de movilidad y discapacidad cognitiva lazos (p = 0,54 > 0,05), soy capaz de aplicar estrategias didácticas basadas en las TIC para facilitar la integración de alumnos con problemas de movilidad y discapacidades cognitivas (p = 0,80 > 0,05), conozco las posibilidades que ofrecen las TIC a alumnos con movilidad o problemas cognitivos (p = 0,62> 0,05), conozco programas educativos utilizados para apoyar las habilidades cognitivas (p = 0,73> 0,05), conozco varios sitios web con material educativo para estudiantes con discapacidad cognitiva (p = 1,00> 0,05), soy capaz de aplicar estrategias didácticas utilizando herramientas TIC para facilitar la integración de los alumnos con discapacidad cognitiva (p = 0,15 > 0,05), conozco varias webs con material educativo para alumnos con discapacidad cognitiva (p = 0,09 > 0,05), conozco las posibilidades que ofrecen las herramientas TIC a alumnos con discapacidad cognitiva (p = 0,90 > 0,05), conozco las posibilidades que ofrecen los sistemas operativos más accesibles a los alumnos con discapacidad cognitiva (p = 0,55 > 0,05).

Correlación de Variables Cruzadas Numéricas

En la siguiente tabla de Correlaciones se calcularon los índices de correlación de Pearson **r** entre las variables independientes. Todos los indicadores **fueron positivos** y **estadísticamente significativos** (p <0,001). El tamaño de los indicadores varió de 0,35 ("Años de Experiencia Docente en Educación Especial" X "Tipo de Empleo") a 0,79 ("Años de Experiencia Docente en Educación Especial" X "Años de Experiencia Docente").

Correlations

		Age	Years of Teaching Experience in Special Education	Years of Teaching Experience	Type of Employment
Age	Pearson Correlation	1	.616**	.766**	.500**
	Sig. (2-tailed)		.000	.000	.000
	N	210	210	210	210
Years of Teaching Experience in Special Education	Pearson Correlation	.616**	1	.790**	.355**
	Sig. (2-tailed)	.000		.000	.000
	N	210	210	210	210
Years of Teaching Experience	Pearson Correlation	.766**	.790**	1	.442**
	Sig. (2-tailed)	.000	.000		.000
	N	210	210	210	210
Type of Employment	Pearson Correlation	.500**	.355**	.442**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	210	210	210	210

**. Correlation is significant at the 0.01 level (2-tailed).

Análisis de correlación.

Pronóstico Estadístico (Regresión)

Se utilizó análisis de regresión múltiple con las siguientes variables predictoras: Edad, Años de Experiencia Docente en Educación Especial, Años de Experiencia Docente y Tipo de Empleo para todas las pruebas estadísticas de Pronóstico.

El índice de multicorrelación es igual a 0,44 y el coeficiente de determinación ajustado R^2 es igual a 0,18. Es decir, el 18% de la dispersión del nivel de conocimientos generales sobre las posibilidades que ofrecen las TIC a los alumnos con necesidades educativas especiales puede interpretarse por la influencia de variables independientes. La

pendiente de la línea de regresión **es significativamente diferente de cero,** F (4,205) = 12,25, p <0,001. De la revisión de los coeficientes de regresión se encontró que tres (de cuatro) variables independientes contribuyen significativamente a la predicción de la dependiente. Es decir, **a menor edad y mayor experiencia docente, mayor nivel de conocimiento general** sobre las posibilidades que ofrecen las TIC al alumnado con necesidades educativas especiales.

Se utilizó análisis de regresión múltiple para probar la previsibilidad de si los participantes son conscientes de las dificultades creadas por los diferentes tipos de discapacidad en el uso de las TIC, por las características de los educadores. El índice de afinidad múltiple es igual a 0,48 y el coeficiente de determinación ajustado R^2 es igual a 0,21. Es decir, el 21% de la dispersión de "si conocen las dificultades que generan los diferentes tipos de discapacidad en el uso de las TIC", se explica por la influencia de variables independientes. La pendiente de la línea de regresión **es significativamente diferente de cero,** F (4,205) = 15,28, p <0,001. De la revisión de los coeficientes de regresión se encontró que **dos** (de cuatro) variables independientes **contribuyen significativamente** a la predicción de la dependiente: la "Edad" (b = -0,45, t = -7,54, p <0,001) y los "Años de Experiencia Docente" (b = 0,35, t = 5,62, p <0,001).

Se utilizó análisis de regresión múltiple para probar la predictibilidad de "si saben seleccionar herramientas TIC específicas en función de las características físicas, sensoriales y cognitivas de diferentes individuos", a partir de las características de los educadores. El índice de afinidad múltiple es igual a 0,39 y el coeficiente de determinación ajustado R^2 es igual a 0,14. Es decir, el 14% de la dispersión de si saben elegir determinadas herramientas TIC en función de las características físicas, sensoriales y cognitivas de diferentes individuos, puede explicarse por la influencia de variables independientes. La pendiente de la línea de regresión es **significativamente diferente de cero,** F (4,205) = 9,37, p <0,001. De la revisión de los coeficientes de regresión se encontró que **dos** (de cuatro) variables independientes **contribuyen significativamente** a la predicción de la dependiente: la "Edad" (b = -0,41, t = -6,00, p <0,001) y la "años de experiencia docente" (b = 0,29, t = 4,02, p <0,001).

Se utilizó análisis de regresión múltiple para probar la capacidad de predecir si los participantes conocen prácticas de formación en TIC para estudiantes con diferentes tipos de discapacidad, a partir de las características de los educadores. El índice de correlación múltiple es igual a 0,51 y el coeficiente de determinación ajustado R^2 es igual a 0,24. Es decir, el 24% de la dispersión de si los participantes conocen las prácticas de formación en TIC para estudiantes con diferentes tipos de discapacidad, se puede explicar por la influencia de variables independientes. La pendiente de la línea de regresión **es significativamente diferente de cero,** F (4,205) = 17,90, p <0,001. De la revisión de los coeficientes de regresión se encontró que **dos** (de las cuatro) variables independientes **contribuyen significativamente** a la predicción de la dependiente: la

"Edad" (b = -0,47, t = -7,90, p <0,001) y la "Años de Experiencia Docente" (b = 0,35, t = 5,73, p <0,001).

Se utilizó el análisis de regresión múltiple para probar la previsibilidad de si los educadores conocen aplicaciones compatibles con los teléfonos modernos y tienen prácticas de capacitación en educación especial, según las características de los educadores. El índice de afinidad múltiple es igual a 0,322 y el coeficiente de determinación ajustado R^2 es igual a 0,09. Es decir, el 9% de la dispersión de si conocen aplicaciones soportadas por teléfonos móviles de tecnología moderna y se relacionan con prácticas educativas en educación especial, puede explicarse por la influencia de variables independientes. La pendiente de la línea de regresión **es significativamente diferente de cero,** F (4,205) = 5,93, p <0,001. De la revisión de los coeficientes de regresión se encontró que **tres** (de las cuatro) **variables independientes contribuyen significativamente** a la predicción de la dependiente: la "Edad" (b = -0,30, t = -3,71, p <0,001) los "Años de Experiencia Docente" (b = 0,39, t = 4,58, p <0,001) y los "Años de Experiencia Docente en Educación Especial" (b = -0,21, t = -2,33, p <0,05).

Se utilizó un análisis de regresión múltiple para probar la previsibilidad de que los educadores pudieran ubicar materiales educativos en línea para estudiantes con necesidades educativas especiales, según las características de los educadores. El índice de multicorrelación es igual a 0,58 y el coeficiente de determinación ajustado R^2 es igual a 0,33. Es decir, el 33% de la dispersión de las habilidades de los docentes para encontrar material educativo adaptado a estudiantes con necesidades educativas especiales en Internet se puede explicar por la influencia de variables independientes. La pendiente de la recta de regresión **es significativamente diferente de cero**, F (4,205) = 26,64, p <0,001. De la revisión de los coeficientes de regresión se encontró que **dos** (de cuatro) variables independientes **contribuyen significativamente** a la predicción de la dependiente: la "Edad" (b = -0,49, t = -9,88, p <0,001) y los "Años de experiencia docente" (b = 0,35, t = 6,70, p <0,001).

Se utilizó análisis de regresión múltiple para probar la capacidad de predecir si los participantes se sienten preparados para ayudar al estudiante con necesidades educativas especiales para beneficiarse del uso de las TIC, según las características de los educadores. El índice de afinidad múltiple es igual a 0,43 y el coeficiente de determinación ajustado R^2 es igual a 0,17. Es decir, el 17% de la dispersión de si saben elegir determinadas herramientas TIC en función de las características físicas, sensoriales y cognitivas de diferentes individuos, puede explicarse por la influencia de variables independientes. La pendiente de la recta de regresión **es significativamente diferente de cero**, F (4,205) = 11,97, p <0,001. De la revisión de los coeficientes de regresión se encontró que **dos** (de cuatro) variables independientes **contribuyen significativamente** a la predicción de la dependiente: la "Edad" (b= -0,42, t = -6,30, p <0,001) y los "Años de experiencia docente" (b = 0,36, t = 5,13, p <0,001).

Se utilizó análisis de regresión múltiple para probar la predictibilidad de si los educadores saben diseñar actividades con software educativo para estudiantes con necesidades educativas especiales, a partir de las características de los instructores. El índice de afinidad múltiple es igual a 0,43 y el coeficiente de determinación ajustado R^2 es igual a 0,17. Es decir, el 17% de la dispersión de si saben elegir determinadas herramientas TIC en función de las características físicas, sensoriales y cognitivas de diferentes individuos, puede explicarse por la influencia de variables independientes. La pendiente de la línea de regresión **es significativamente diferente de cero**, F (4,205) = 11,41, p <0,001. De la revisión de los coeficientes de regresión se encontró que **dos** (de cuatro) variables independientes **contribuyen significativamente** a la predicción de la dependiente: la "Edad" (b = -0,39, t = -5,45, p <0,001) y los "Años de experiencia docente" (b = 0,46, t = 6,09, p <0,001).

Se utilizó análisis de regresión múltiple para probar la predictibilidad de si los participantes son capaces de explicar las posibilidades que ofrece una máquina de escribir braille para estudiantes con deficiencias visuales y discapacidad cognitiva, a partir de las características de los educadores. El índice de afinidad múltiple es igual a 0,48 y el coeficiente de determinación ajustado R^2 es igual a 0,22. Es decir, el 22% de la dispersión de si saben elegir determinadas herramientas TIC en función de las características físicas, sensoriales y cognitivas de diferentes individuos, puede explicarse por la influencia de variables independientes. La pendiente de la recta de regresión **es significativamente diferente de cero**, F (4,205) = 15,55, p <0,001. De la revisión de los coeficientes de regresión se encontró que **tres** (de las cuatro) variables independientes **contribuyen significativamente** a la predicción de la dependiente: la "Edad" (b = -0,361, t = -5,30, p <0,001), los "Años de Experiencia Docente" (b = 0,29, t = 4,16, p <0,001) y los "Años de Experiencia Docente en Educación Especial" (b = -0,35, t = -4,66, p <0,001).

Se utilizó análisis de regresión múltiple para probar la previsibilidad de si los participantes conocen las posibilidades que ofrecen los lectores de pantalla para las personas con discapacidad visual y cognitiva, según las características de los educadores. El índice de afinidad múltiple es igual a 0,45 y el coeficiente de determinación ajustado R^2 es igual a 0,19. Es decir, el 19% de la dispersión de si saben elegir determinadas herramientas TIC en función de las características físicas, sensoriales y cognitivas de diferentes individuos, puede explicarse por la influencia de variables independientes. La pendiente de la recta de regresión es **significativamente diferente de cero**, F (4,205) = 12,95, p <0,001. De la revisión de los coeficientes de regresión se encontró que **tres** (de cuatro) variables independientes **contribuyen significativamente** a la predicción de la dependiente: la "Edad" (b = -0,38, t = -4,77, p <0,001), los "Años de Experiencia Docente" (b=0,41, t=4,89, p<0,001) y los "Años de Experiencia Docente en Educación Especial" (b=-0,45, t=-4,99, p<0,001).

Se utilizó el análisis de regresión múltiple para probar la previsibilidad de si los participantes conocen los diferentes tipos de equipos conectados a la computadora y

utilizados por los estudiantes con deficiencias visuales y discapacidades cognitivas, por las características de los educadores. El índice de correlación múltiple es igual a 0,35 y el coeficiente de determinación ajustado R^2 es igual a 0,11. Es decir, el 11% de la dispersión de si saben elegir determinadas herramientas TIC en función de las características físicas, sensoriales y cognitivas de cada alumno, se explica por la influencia de variables independientes. La pendiente de la recta de regresión **es significativamente diferente de cero**, F (4,205) = 7,37, p <0,001. De la revisión de los coeficientes de regresión se encontró que **tres** (de cuatro) variables independientes **contribuyen significativamente** a la predicción de la dependiente: la "Edad" (b = -0,29, t = -3,59, p <0,001), los "Años de Experiencia Docente" (b = 0,36, t = 4,20, p <0,001)) y los "Años de Experiencia Docente en Educación Especial" (b = - 0,36, t = -3,87, p <0,001)

Se utilizó un análisis de regresión múltiple para evaluar la capacidad de predecir si los participantes conocen varios programas de ampliación de pantalla, como JAWS, que utilizan los estudiantes con discapacidad visual y cognitiva, según las características de los educadores. El índice de afinidad múltiple es igual a 0,32 y el coeficiente de determinación ajustado R^2 es igual a 0,08. Es decir, el 8% de la dispersión de si los participantes conocen varios programas de ampliación de pantalla, como JAWS, que utilizan los estudiantes con discapacidad visual y cognitiva, puede explicarse por la influencia de variables independientes. La pendiente de la recta de regresión **es significativamente diferente de cero**, F (4,205) = 5,86, p <0,001. De la revisión de los coeficientes de regresión se encontró que **tres** (de las cuatro) variables independientes **contribuyen significativamente** a la predicción de la dependiente: la "Edad" (b = -0,28, t = -3,13, p <0,001), los "Años de Experiencia Docente" (b = 0,35, t = 3,77, p <0,001) y los "Años de Experiencia Docente en Educación Especial" (b = -0,35, t = -3,48, p <0,01)

Se utilizó un análisis de regresión múltiple para probar la previsibilidad de si los participantes podían diseñar material didáctico en Word Editor, eliminando aspectos de discapacidad visual y discapacidad cognitiva de las características de los educadores. El índice de afinidad múltiple es igual a 0,41 y el coeficiente de determinación ajustado R^2 es igual a 0,15. Es decir, el 15% de los participantes afirma saber diseñar material didáctico en Word Editor, eliminando aspectos de discapacidad visual y discapacidad cognitiva, puede explicarse por la influencia de variables independientes. La pendiente de la recta de regresión es **significativamente diferente de cero**, F (4,205) = 10,33, p <0,001. De la revisión de los coeficientes de regresión se encontró que **tres** (de cuatro) variables independientes **contribuyen significativamente** a la predicción de la dependiente: la "Edad" (b = -0,29, t = -3,83, p <0,001), los "Años de Experiencia Docente" (b = 0,22, t = 2,77, p <0,01) y los "Años de Experiencia Docente en Educación Especial" (b = -0,22, t = -2,65, p <0, 01).

Se utilizó análisis de regresión múltiple para probar la posibilidad de predecir si los educadores conocen navegadores específicos para personas con discapacidad visual y

discapacidad cognitiva, a partir de las características de los educadores. El índice de afinidad múltiple es igual a 0,31 y el coeficiente de determinación ajustado R^2 es igual a 0,08. Es decir, el 8% de la dispersión de si si los educadores conocen navegadores específicos para personas con discapacidad visual y discapacidad cognitiva, se puede explicar por la influencia de variables independientes. La pendiente de la recta de regresión **es significativamente diferente de cero**, F (4,205) = 5,55, p <0,001. De la revisión de los coeficientes de regresión se encontró que **dos** (de cuatro) variables independientes **contribuyen significativamente** a la predicción de la dependiente: la "Edad" (b = -0,26, t = -3,32, p <0,01) y los "Años de Experiencia Docente en Educación Especial" (b = -0,20, t = -2,27, p < 0,05).

Se utilizó análisis de regresión múltiple para probar la capacidad de predecir si los participantes conocen sitios web con material educativo para personas con discapacidad visual y discapacidad cognitiva, a partir de las características de los educadores. El índice de correlación múltiple es igual a 0,51 y el coeficiente de determinación ajustado R^2 es igual a 0,25. Es decir, el 25% de la dispersión de si conocen sitios web con material educativo para personas con discapacidad visual y discapacidad cognitiva, se puede explicar por la influencia de variables independientes. La pendiente de la línea de regresión es **significativamente diferente de cero**, F (4,205) = 18,18, p <0,001. De la revisión de los coeficientes de regresión se encontró que **tres** (de cuatro) variables independientes **contribuyen significativamente** a la predicción de la dependiente: la "Edad" (b = -0,35, t = -5,15, p <0,001), los "Años de Experiencia Docente" (b = 0,26, t = 3,73, p <0,001) y los "Años de Experiencia Docente en Educación Especial" (b = -0,37, t = -4,82, p <0,001)

Se utilizó análisis de regresión múltiple para probar la previsibilidad de que los participantes puedan aplicar estrategias didácticas y adaptaciones a los currículos apoyados en TIC para facilitar la inclusión de estudiantes con discapacidad visual y discapacidad cognitiva, desde las características de los educadores. El índice de multicorrelación es igual a 0,45 y el coeficiente de determinación ajustado R^2 es igual a 0,18. Es decir, el 18% del grado en que los participantes puedan aplicar estrategias didácticas y adaptaciones a los currículos apoyados en TIC para facilitar la inclusión de estudiantes con discapacidad visual y discapacidad cognitiva, se puede explicar por la influencia de variables independientes. La pendiente de la recta de regresión **es significativamente diferente de cero**, F (4,205) = 12,72, p <0,001. De la revisión de los coeficientes de regresión se encontró que **tres** (de las cuatro) variables independientes contribuyen significativamente a la predicción de la dependiente: la "Edad" (b = -0,34, t = -4,75, p <0,001), los "Años de Experiencia Docente" (b = 0,18, t = 2,36, p <0,05) y los "Años de Experiencia Docente en Educación Especial" (b = -0,25, t = -3,06, p <0,01).

Se utilizó análisis de regresión múltiple para probar la capacidad de predecir si los participantes conocen las posibilidades que ofrecen las TIC a los estudiantes con discapacidad visual y discapacidad cognitiva, a partir de las características de los

educadores. El índice de afinidad múltiple es igual a 0,52 y el coeficiente de determinación ajustado R^2 es igual a 0,25. Es decir, el 25% de los encuestados conocen las posibilidades que ofrecen las TIC a los estudiantes con discapacidad visual y discapacidad cognitiva, puede explicarse por la influencia de variables independientes. La pendiente de la línea de regresión **es significativamente diferente de cero,** F (4,205) = 18,82, p <0,001. De la revisión de los coeficientes de regresión se encontró que **tres** (de las cuatro) variables independientes contribuyen significativamente a la predicción de la dependiente: la "Edad" (b = -0,31, t = -4,66, p <0,001), los "Años de Experiencia Docente" (b = 0,30, t = 4,24, p <0,001) y los "Años de Experiencia Docente en Educación Especial" (b = -0,42, t = -5,48, p <0,001).

Se utilizó análisis de regresión múltiple para probar la capacidad de predecir si los participantes conocen la lengua de signos, a partir de las características de los educadores. El índice de afinidad múltiple es igual a 0,44 y el coeficiente de determinación ajustado R^2 es igual a 0,17. La pendiente de la línea de regresión es **significativamente diferente de cero,** F (4,205) = 12,11, p <0,001. De la revisión de los coeficientes de regresión se encontró que las **cuatro** variables independientes **contribuyen significativamente** a la predicción del dependiente: la "Edad" (b = -0,53, t = -4,67, p <0,001) el "Tipo de Empleo" (b = 0,35, t = 2,80, p <0,01) los "Años de Experiencia Docente" (b = 0,69, t = 5,76, p <0,001) y los "Años de Experiencia Docente en Educación Especial" (b = -0,60, t = -4,68, p<0,001).

Se utilizó el análisis de regresión múltiple para probar la capacidad de predecir si los participantes conocen varios programas de capacitación informática utilizados para mejorar el habla oral y escrita, a partir de las características de los educadores. El índice de afinidad múltiple es igual a 0,68 y el coeficiente de determinación ajustado R^2 es igual a 0,45. La pendiente de la línea de regresión **es significativamente diferente de cero,** F (4,205) = 44,41, p <0,001. De la revisión de los coeficientes de regresión se encontró que las **cuatro** variables independientes **contribuyen significativamente** a la predicción del dependiente: la "Edad" (b = -0,48, t = -6,98, p <0,001) el "Tipo de Empleo" (b = 0,48, t = 6,39, p <0,001) los "Años de Experiencia Docente" (b = 0,60, t = 8,35, p <0,001) y los "Años de Experiencia Docente en Educación Especial" (b = -0,79, t = -10,11, p<0,001).

Se utilizó análisis de regresión múltiple para probar la capacidad de predecir si los participantes conocen diferentes sitios web con material educativo para estudiantes con problemas auditivos y discapacidades cognitivas, a partir de las características de los educadores. El índice de multicorrelación es igual a 0,56 y el coeficiente de determinación ajustado R^2 es igual a 0,30. La pendiente de la línea de regresión **es significativamente diferente de cero,** F (4,205) = 23,06, p <0,001. De la revisión de los coeficientes de regresión se encontró que las **cuatro** variables independientes **contribuyen significativamente** a la predicción del dependiente: la "Edad" (b = -0,44, t = -5,85, p <0,001) el "Tipo de Empleo" (b = 0,18, t = 2,13, p <0,05) los "Años de

Experiencia Docente" (b = 0,51, t = 6,43, p <0,001) y los "Años de Experiencia Docente en Educación Especial" (b = -0,61, t = -7,08, p<0,001).

Se utilizó análisis de regresión múltiple para probar la previsibilidad de si los participantes son capaces de aplicar estrategias didácticas basadas en TIC para facilitar la integración de alumnos con discapacidad auditiva y cognitiva, a partir de las características de los educadores. El índice de afinidad múltiple es igual a 0,65 y el coeficiente de determinación ajustado R^2 es igual a 0,42. La pendiente de la línea de regresión **es significativamente diferente de cero,** F (4,205) = 38,40, p <0,001. De la revisión de los coeficientes de regresión se encontró que las **cuatro** variables independientes **contribuyen significativamente** a la predicción del dependiente: la "Edad" (b = -0,54, t = -7,16, p <0,001) el "Tipo de Empleo" (b = 0,35, t = 4,21, p <0,001) los "Años de Experiencia Docente" (b = 0,60, t = 7,66, p <0,001) y los "Años de Experiencia Docente en Educación Especial" (b = -0,78, t = -9,17, p <0,001).

Se utilizó análisis de regresión múltiple para comprobar la capacidad de predecir si los participantes conocen las posibilidades que ofrecen las TIC a los alumnos con problemas auditivos y discapacidades cognitivas, a partir de las características de los educadores. El índice de afinidad múltiple es igual a 0,61 y el coeficiente de determinación ajustado R^2 es igual a 0,36. La pendiente de la línea de regresión **es significativamente diferente de cero,** F (4,205) = 29,98, p <0,001. De la revisión de los coeficientes de regresión se encontró que **tres** (de cuatro) variables independientes **contribuyen significativamente** a la predicción de la dependiente: la "Edad" (b = -0,36, t = -4,45, p <0,001) los "Años de Experiencia Docente" (b = 0,58, t = 6,79, p <0,001) y los "Años de Experiencia Docente en Educación Especial" (b = -0,86, t = -9,34, p <0,001).

Se utilizó un análisis de regresión múltiple para probar la previsibilidad de si los participantes conocen diferentes programas de reentrenamiento del habla de las características de los educadores. El índice de multicorrelación es igual a 0,52 y el coeficiente de determinación ajustado R^2 es igual a 0,26. La pendiente de la línea de regresión **es significativamente diferente de cero,** F (4,205) = 19,42, p <0,001. De la revisión de los coeficientes de regresión se encontró que las **cuatro** variables independientes **contribuyen significativamente** a la predicción del dependiente: la "Edad" (b = -0,40, t = -4,97, p <0,001) el "Tipo de Empleo" (b = 0,23, t = 2,60, p <0,05) los "Años de Experiencia Docente" (b = 0,61, t = 7,14, p <0,001) y los "Años de Experiencia Docente en Educación Especial" (b = -0,64, t = -7,04, p<0,001).

Se utilizó análisis de regresión múltiple para probar la capacidad de predecir si los participantes conocen diferentes tipos de teclados para estudiantes con problemas de movilidad, a partir de las características de los educadores. El índice de correlación múltiple es igual a 0,50 y el coeficiente de determinación ajustado R^2 es igual a 0,24. La pendiente de la línea de regresión **es significativamente diferente de cero,** F (4,205) = 17,48, p <0,001. De la revisión de los coeficientes de regresión se encontró

que **tres** (de las cuatro) variables independientes **contribuyen significativamente** a la predicción de la dependiente: la "Edad" (b = -0,44, t = -7,69, p <0,001), los "Años de Experiencia Docente" (b = 0,33, t = 5,55, p <0,001) y los "Años de Experiencia Docente en Educación Especial" (b = -0,16, t = -2,55, p <0,05)

Se utilizó el análisis de regresión múltiple para probar la capacidad de predecir si los participantes conocen los programas informáticos que controlan la computadora por comando de voz, a partir de las características de los educadores. El índice de afinidad múltiple es igual a 0,47 y el coeficiente de determinación ajustado R^2 es igual a 0,20. La pendiente de la línea de regresión es **significativamente diferente de cero,** F (4,205) = 14,37, p <0,001. De la revisión de los coeficientes de regresión se encontró que tres (de cuatro) variables independientes **contribuyen significativamente** a la predicción de la dependiente: la "Edad" (b = -0,37, t = -5,03, p <0,001) los "Años de Experiencia Docente" (b = 0,53, t = 6,80, p <0,001) y los "Años de Experiencia Docente en Educación Especial" (b = -0,46, t = -5,41, p <0,001).

Se utilizó análisis de regresión múltiple para probar la capacidad de predecir si los participantes conocen material educativo para estudiantes con problemas de movilidad, a partir de las características de los educadores. El índice de multicorrelación es igual a 0,58 y el coeficiente de determinación ajustado R^2 es igual a 0,32. La pendiente de la línea de regresión **es significativamente diferente de cero,** F (4,205) = 25,87, p <0,001. De la revisión de los coeficientes de regresión se encontró que **tres** (de las cuatro) variables independientes **contribuyen significativamente** a la predicción de la dependiente: la "Edad" (b = -0,49, t = -8,48, p <0,001), los "Años de Experiencia Docente" (b = 0,54, t = 8,95, p <0,001) y los "Años de Experiencia Docente en Educación Especial" (b = -0,32, t = -4,90, p <0,001).

Se utilizó un análisis de regresión múltiple para probar la predictibilidad de si los participantes son capaces de aplicar estrategias de enseñanza basadas en las TIC para facilitar la integración de estudiantes con problemas de movilidad y discapacidades cognitivas, desde las características de los educadores. El índice de multicorrelación es igual a 0,57 y el coeficiente de determinación ajustado R^2 es igual a 0,31. La pendiente de la línea de regresión es **significativamente diferente de cero,** F (4,205) = 24,94, p <0,001. De la revisión de los coeficientes de regresión se encontró que **tres** (de cuatro) variables independientes **contribuyen significativamente** a la predicción de la dependiente: la "Edad" (b = -0,48, t = -8,81, p <0,001) los "Años de Experiencia Docente" (b = 0,40, t = 7,09, p <0,001) y los "Años de Experiencia Docente en Educación Especial" (b = -0,24, t = -3,97, p <0,001).

Se utilizó análisis de regresión múltiple para probar la capacidad de predecir si los participantes conocen diferentes sitios web con material educativo para estudiantes con discapacidad cognitiva, a partir de las características de los educadores. El índice de multicorrelación es igual a 0,54 y el coeficiente de determinación ajustado R^2 es igual a 0,28. La pendiente de la línea de regresión **es significativamente diferente de cero,**

F (4,205) = 21,00, p <0,001. De la revisión de los coeficientes de regresión se encontró que **dos** (de las cuatro) variables independientes **contribuyen significativamente** a la predicción de la dependiente: la "Edad" (b = -0,42, t = -7,69, p <0,001) y los "Años de Experiencia Docente en Educación Especial" (b = -0,28, t = -4,61, p <0,001).

Se utilizó análisis de regresión múltiple para probar la capacidad de predecir la capacidad de los participantes para realizar ajustes a los planes de estudio apoyados en herramientas TIC y dirigidos a estudiantes con discapacidad cognitiva, según las características de los educadores. El índice de multicorrelación es igual a 0,58 y el coeficiente de determinación ajustado R^2 es igual a 0,32. La pendiente de la línea de regresión **es significativamente diferente de cero,** F (4,205) = 26,10, p <0,001. De la revisión de los coeficientes de regresión se encontró que las **cuatro** variables independientes **contribuyen significativamente** a la predicción de la dependiente: la "Edad" (b = -0,48, t = -7,94, p <0,001) el "Tipo de empleo" (b = -0,15, t = -2,20, p <0,05) los "Años de Experiencia Docente" (b = 0,48, t = 7,49, p <0,001) y los "Años de Experiencia Docente en Tratamiento Especial" (b = -0,28, t = -4,08, p <0,001).

Se utilizó análisis de regresión múltiple para probar la capacidad de predecir si los participantes conocen diferentes sitios web con material educativo para estudiantes con discapacidad cognitiva, a partir de las características de los educadores. El índice de correlación múltiple es igual a 0,59 y el coeficiente de determinación ajustado R^2 es igual a 0,34. La pendiente de la línea de regresión **es significativamente diferente de cero,** F (4,205) = 28,08, p <0,001. De la revisión de los coeficientes de regresión se encontró que **tres** (de cuatro) variables independientes **contribuyen significativamente** a la predicción de la dependiente: la "Edad" (b = -0,47, t = -9,55, p <0,001) los "Años de Experiencia Docente" (b = 0,38, t = 7,37, p <0,001) y los "Años de Experiencia Docente en Educación Especial" (b = -0,22, t = -3,94, p <0,001).

Se utilizó el análisis de regresión múltiple para probar la previsibilidad de si los participantes son conscientes de las capacidades de los sistemas operativos, más accesibles para los estudiantes con discapacidades cognitivas, de las características de los educadores. El índice de afinidad múltiple es igual a 0,45 y el coeficiente de determinación ajustado R^2 es igual a 0,18. La pendiente de la línea de regresión **es significativamente diferente de cero,** F (4,205) = 12,77, p <0,001. De la revisión de los coeficientes de regresión se encontró que **tres** (de cuatro) variables independientes **contribuyen significativamente** a la predicción de la dependiente: la "Edad" (b = -0,30, t = -3,88, p <0,001) los "Años de Experiencia Docente" (b = 0,47, t = 5,69, p <0,001) y los "Años de Experiencia Docente en Educación Especial" (b = -0,50, t = -5,69, p <0,001).

Se utilizó el análisis de regresión múltiple para probar la capacidad de predecir si los participantes saben qué son las pruebas de accesibilidad del sitio web, a partir de las características de los educadores. El índice de multicorrelación es igual a 0,40 y el coeficiente de determinación ajustado R^2 es igual a 0,15. La pendiente de la línea de

regresión **es significativamente diferente de cero,** F (4,205) = 9,98, p <0,001. De la revisión de los coeficientes de regresión se encontró que **dos** (de cuatro) variables independientes **contribuyen significativamente** a la predicción de la dependiente: los "Años de Experiencia Docente" (b = 0,27, t = 3,13, p <0,01) y el "Años de Experiencia Docente en Educación Especial" (b = -0,51, t = -5,50, p <0,001)

Se utilizó un análisis de regresión múltiple para probar la previsibilidad de la familiaridad de los participantes con las pautas generales de accesibilidad del sitio web WAI/W3C, según las características de los educadores. El índice de afinidad múltiple es igual a 0,39 y el coeficiente de determinación ajustado R^2 es igual a 0,14. La pendiente de la línea de regresión **es significativamente diferente de cero,** F (4,205) = 9,43, p <0,001. De la revisión de los coeficientes de regresión se encontró que **dos** (de cuatro) variables independientes **contribuyen significativamente** a la predicción de la dependiente: los "Años de Experiencia Docente" (b = 0,30, t = 3,40, p <0,01) y el "Años de Experiencia Docente en Educación Especial" (b = -0,56, t = -5,92, p <0,001).

Se utilizó análisis de regresión múltiple para probar la capacidad de predecir si los participantes tienen la capacidad de crear páginas web con altos parámetros de accesibilidad, a partir de las características de los educadores. El índice de multicorrelación es igual a 0,55 y el coeficiente de determinación ajustado R^2 es igual a 0,29. La pendiente de la línea de regresión **es significativamente diferente de cero,** F (4,205) = 21,90, p <0,001. De la revisión de los coeficientes de regresión se encontró que las **cuatro** variables independientes **contribuyen significativamente** a la predicción del dependiente: la "Edad" (b = 0,18, t = 2,40, p <0,05) el "Tipo de Empleo" (b= -0,32, t = -3,84, p <0,001) los "Años de Experiencia Docente" (b = 0,42, t = 5,23, p <0,001) y los "Años de Experiencia Docente en Educación Especial" (b = -0,73, t = -8,42, p<0,001).

Se utilizó un análisis de regresión múltiple para probar la capacidad de predecir si los participantes tienen la capacidad de adaptar una computadora, incluidos los periféricos, a las necesidades educativas de todos los estudiantes con discapacidades, según las características de los educadores. El índice de afinidad múltiple es igual a 0,43 y el coeficiente de determinación ajustado R^2 es igual a 0,17. La pendiente de la línea de regresión **es significativamente diferente de cero,** F (4,205) = 11,82, p <0,001. De la revisión de los coeficientes de regresión se encontró que **tres** (de cuatro) variables independientes **contribuyen significativamente** a la predicción de la dependiente: el "Tipo de empleo" (b = -0,26, t = -2,60, p <0,05) el "Años de Experiencia Docente" (b = 0,36, t = 3,86, p <0,001) y "Años de Experiencia Docente en Educación Especial" (b = -0,61, t = -5,97, p <0,001).

Se utilizó un análisis de regresión múltiple para probar la capacidad de predecir la capacidad de los participantes para informar varias pruebas de accesibilidad, según las características de los educadores. El índice de afinidad múltiple es igual a 0,46 y el coeficiente de determinación ajustado R^2 es igual a 0,20. La pendiente de la línea de

regresión **es significativamente diferente de cero,** F (4,205) = 13,92, p <0,001. De la revisión de los coeficientes de regresión se encontró que **dos** (de cuatro) variables independientes **contribuyen significativamente** a la predicción de la dependiente: los "Años de Experiencia Docente" (b = 0,43, t = 4,60, p <0,001) y la "Años de Experiencia Docente en Educación Especial" (b = -0,74, t = -7,34, p <0,001).

Conclusión

Los resultados de la prueba T para todas las variables mostraron que solo **7 de los 41 se asocian significativamente con el género**. En particular, las mujeres (M = 4,35, SD = 0,48) tienen más probabilidades que los hombres de encontrar materiales educativos en línea para estudiantes con necesidades educativas especiales (M = 3,93, SD = 1130), t (113,07) = -3,29, p = 0,001. Además, los hombres (M = 3,40, DT = 1,09) saben más sobre pruebas de accesibilidad para sitios web que las mujeres (M = 2,60, DT = 1,25), t (203,11) = 4,95, p = 0,00001. Además, los hombres (M = 3,20, SD = 1,11) están más familiarizados con las pautas generales WAI/W3C para la accesibilidad del sitio web que las mujeres (M = 2,50, SD = 1, 29), t (203,85) = 4,21, p = 0,00001. Asimismo, los hombres (M = 3,20, SD = 1,11) están más familiarizados con la creación de sitios web con altos parámetros de accesibilidad que las mujeres (M = 2,20, SD = 1,21), t (208) = 6,12, p = 0,00001. Los hombres (M = 3,40, SD = 1,15) también pueden adaptar más fácilmente una computadora, incluidos los periféricos, a las necesidades educativas de cada alumno (M = 2,65, SD = 1,46), t (207,55) = 4,16, p = 0,00001.

Adicionalmente, en la pregunta sobre el conocimiento de las diferentes instituciones relacionadas con el estudio e investigación de la accesibilidad de los sitios web, los hombres (M = 3,33, SD = 1,25) conocen más que las mujeres las diferentes instituciones relacionadas con el estudio e investigación de la accesibilidad de los sitios web (M = 2,40, DT = 1,32), t (208) = 5,17, p = 0,00001. En particular, los hombres (M = 3,13, SD = 1,21) pueden reportar varias pruebas de accesibilidad más que las mujeres encuestadas (M = 2,65, SD = 1,50), t (206,83) = 2,58, p = 0,01.

En cuanto al análisis ANOVA, se pudo concluir que, a menor edad y mayor experiencia docente, mayor nivel de conocimiento general sobre las posibilidades que ofrecen las TIC al alumnado con necesidades educativas especiales. Además, una conclusión más es que a menor edad y mayor experiencia docente, más conocen las dificultades que plantean los distintos tipos de discapacidad en el uso de las TIC. Considerando que, cuanto más joven es la persona y mayor es la experiencia docente, mejor saben los educadores cómo seleccionar herramientas TIC específicas en función de las características físicas, sensoriales y cognitivas de diferentes individuos.

También se concluyó que, a menor edad y mayor experiencia docente, mejor conocen las prácticas de formación en TIC para estudiantes con diferentes tipos de discapacidad. El análisis adicional de Anova mostró que cuanto más joven es la persona y mayor es la experiencia docente, mejor conocen los educadores las aplicaciones que son

compatibles con los teléfonos móviles de tecnología moderna y se relacionan con las prácticas educativas en educación especial.

Además, el análisis de la investigación reveló que cuanto más jóvenes son y mayor es la experiencia docente, más capaces son de encontrar material educativo para estudiantes con necesidades educativas especiales en Internet. Además, a menor edad y mayor experiencia docente, los educadores se sienten más preparados para apoyar al alumnado con necesidades educativas especiales para que se beneficie del uso de las TIC. Otra conclusión es que, a menor edad y mayor experiencia docente, mejor saben los docentes cómo planificar actividades con software educativo para alumnado con necesidades educativas especiales. Mientras, cuanto más joven es la persona y mayor es la experiencia docente en educación especial, los educadores se sienten más capaces de hacer frente a las posibilidades que ofrece una máquina de escribir braille para los alumnos con problemas de visión.

Otras conclusiones que reveló la investigación es que cuanto más joven es el docente y mayor es la experiencia en educación especial, mejor conocen los educadores las posibilidades que ofrecen los lectores de pantalla para los estudiantes con deficiencias visuales y discapacidades cognitivas. Además, cuanto más joven es la persona y mayor es la experiencia docente en educación especial, mejor conocen los educadores los diferentes tipos de equipos conectados a la computadora que utilizan los estudiantes con problemas de visión y discapacidades cognitivas. Además, cuanto más joven es el educador y mayor es la experiencia docente en educación especial, mejor conocen los educadores varios software de ampliación de pantalla como JAWS, que utilizan los estudiantes con problemas visuales.

De la encuesta se concluyó que cuanto menor es la edad y mayor la experiencia docente en educación especial, mejor pueden los educadores diseñar material didáctico en Word Editor, eliminando los aspectos que dificultan a los estudiantes con deficiencias visuales y discapacidades cognitivas. Así como cuanto menor sea la edad y mayor sea la experiencia docente en educación especial, mejor conocerán los educadores los navegadores específicos para estudiantes con discapacidad visual.

Además, cuanto más joven es la persona y mayor es la experiencia docente en educación especial, mejor conocen los educadores los sitios web con material educativo para estudiantes con discapacidad visual y más capaces son de aplicar estrategias didácticas y adaptaciones a los currículos apoyados por las TIC para facilitar la inclusión de los estudiantes con discapacidad visual. Finalmente, en cuanto a las discapacidades visuales, cuanto más joven es el educador y mayor la experiencia docente en educación especial, más conocen los educadores sobre las posibilidades que ofrecen las TIC al alumnado con problemas de visión.

En cuanto a las discapacidades auditivas, de la investigación se desprende que cuanto menor es la edad y mayor la experiencia docente en educación especial, y en especial

los educadores de tiempo completo bajo contrato de derecho público, mejor conocen la lengua de signos. Además, cuanto más saben acerca de los diversos programas de formación informática utilizados para mejorar el habla oral y escrita, y mejor conocen varios sitios web con material educativo para estudiantes con problemas auditivos, se sienten más capaces de implementar estrategias de enseñanza basadas en las TIC para facilitar la integración de los alumnos con problemas auditivos. Además, concluyó que, a menor edad y mayor experiencia docente en educación especial, mejor conocen los educadores las posibilidades que ofrecen las TIC a los alumnos con problemas de audición y especialmente los educadores de contrato público a tiempo completo, y más programas de readiestramiento del habla diferentes afirman conocer.

En cuanto a los problemas de movilidad, cuanto más joven es la persona y mayor es la experiencia docente en educación especial, los educadores conocen más tipos diferentes de teclados para estudiantes con problemas motrices, así como mejor conocen los programas informáticos que controlan la computadora con comando de voz. Además, a menor edad y mayor experiencia docente en educación especial, mejor conocen el material educativo del alumnado con problemas de movilidad; y a mayor experiencia docente y de educación especial, mayor capacidad para aplicar estrategias didácticas basadas en las TIC para facilitar la integración de los estudiantes con problemas de movilidad. Finalmente, en lo que respecta a las discapacidades de movilidad, se podría resumir que, a menor edad y mayor experiencia docente en educación especial, mejor conocen las posibilidades que ofrecen las TIC al alumnado con problemas de movilidad y discapacidad cognitiva.

Con referencia a las discapacidades cognitivas, cuanto más joven es la edad y mayor es la experiencia docente en educación especial, mejor conocen los educadores los programas educativos utilizados para apoyar las habilidades cognitivas y mejor conocen varios sitios web con material educativo para estudiantes con discapacidades cognitivas, así como más capaces son de implementar estrategias didácticas utilizando herramientas TIC para facilitar la integración de los alumnos con discapacidad cognitiva. Además, a menor edad y mayor experiencia docente y experiencia en educación especial, especialmente los contratistas de tiempo completo de derecho privado, mayor es su capacidad para realizar ajustes en los planes de estudio apoyados en herramientas TIC y dirigidos a estudiantes con discapacidad cognitiva. Además, de la investigación se concluyó que a menor edad y mayor experiencia docente en educación especial, mejor conocen los educadores diversos sitios web con material educativo para alumnado con discapacidad cognitiva y las posibilidades que ofrecen las herramientas TIC, mientras que a menor edad y cuanto mayor es la experiencia docente en educación especial, mejor conocen los educadores las posibilidades que ofrecen los sistemas operativos, más accesibles para los alumnos con discapacidad cognitiva.

En cuanto a las pruebas de accesibilidad del sitio web, se concluye que a mayor experiencia docente y en educación especial, más familiarizados están los educadores con las pruebas de accesibilidad. Además, cuanto mayor es la experiencia docente y la

educación especial, más saben sobre las pautas generales de WAI / W3C para la accesibilidad del sitio web.

De los resultados de la investigación parece que cuanto mayor es la persona y mayor la experiencia docente en educación especial, especialmente para los educadores de derecho privado a tiempo completo, mayor es su capacidad para crear sitios web con altos parámetros de accesibilidad, así como mayor la experiencia docente y educación especial, especialmente para los educadores de derecho privado a tiempo completo, mayor será su capacidad para adaptar una computadora, incluidos los periféricos, a las necesidades educativas de todos los estudiantes con discapacidades y la experiencia docente en educación especial, especialmente derecho privado a tiempo completo Los educadores, mejor sabrán acerca de las diversas instituciones involucradas en el estudio y la investigación de la accesibilidad del sitio web. Finalmente, a mayor experiencia docente y en educación especial, mayor capacidad de los educadores para reportar diversas pruebas de accesibilidad.

En conclusión, de acuerdo con el análisis de regresión de la presente investigación, las variables independientes que juegan el papel más importante son la **edad** y los **años de experiencia docente** en educación **típica** pero también en **educación especial,** en cuanto al tipo de empleo no resultó significativo en el grupo de educadores a tiempo completo con contrato público o privado.

Tomando todo en consideración, puede concluirse que la elección de herramientas adecuadas no es fácil en este ámbito. La correcta elección depende de la experiencia previa del docente y de sus preferencias, pero debe siempre tenerse en cuenta que todas las aplicaciones desarrolladas deben cumplir con el paradigma de Diseño Universal, para que todas las personas puedan acceder a ellas, incluidas aquellas que tienen algún tipo de discapacidad.

Además, con frecuencia se menciona que, en cuanto a las discapacidades, se deben señalar dos situaciones especiales:

- El software que resulta útil para estudiantes con un tipo de discapacidad concreta podría, de hecho, crear barreras para estudiantes con una discapacidad diferente. Por ejemplo, el software que crea gráficos es útil para los estudiantes con discapacidades de aprendizaje, ya que facilita las señales visuales para el aprendizaje, sin embargo, este mismo software puede crear barreras para los estudiantes ciegos.
- El estudiantado considera que el software, como los correctores ortográficos, es útil para mejorar su desempeño y mejorar la calidad de su trabajo. Por otro lado, ven tales herramientas como algo que resta valor al proceso de aprendizaje real.

En general, se acepta que las computadoras tienen el potencial de ayudar a los estudiantes con discapacidad al facilitar los procesos físicos involucrados en la

escritura, ayudando a administrar los procesos de planificación y revisión, y apoyando la interacción social y la comunicación. El acceso a Internet sigue siendo un problema para algunas zonas rurales de Grecia y personas con discapacidad. El aislamiento social puede ser un inconveniente, y la falta de señales no verbales puede dificultar la comunicación. Aunque Internet puede promover el aprendizaje activo, algunos sostienen que, al igual que la televisión, puede generar pasividad (Filipczak, 1995).

Con todo, el efecto positivo de la informática, la información y las tecnologías adaptativas es que existe un buen acuerdo entre los estudiantes y el maestro para brindar servicios a los estudiantes con discapacidad. Más específicamente, sirva como ejemplo el procesamiento de textos que elimina la necesidad de escribir a mano y da como resultado presentaciones ordenadas. Otro ejemplo es que las tecnologías informáticas permiten el acceso a una gran cantidad de información, que los estudiantes pueden trabajar más rápido con la ayuda de la computadora, así como las computadoras brindan más autonomía. Además de esto, las máquinas pueden compensar las discapacidades de los estudiantes y les permiten editar y revisar fácilmente su trabajo. Además, las computadoras facilitan trabajar a su propio ritmo y horario, esto es particularmente significativo para los estudiantes con condiciones médicas especiales y cuyos niveles de energía fluctúan durante el día.

Finalmente, se concluye que los desarrolladores de contenido deben hacer que el contenido sea comprensible y navegable. Esto incluye no solo el lenguaje (haciéndolo claro, simple y comprensible), sino también proporcionando mecanismos para navegar en y entre páginas. Proporcionar herramientas de navegación e información de navegación de páginas maximizará la accesibilidad y la usabilidad. No todos los usuarios pueden hacer uso de señales visuales como imágenes, mapas, marcos uno al lado del otro o gráficos. Debe tenerse en cuenta que los usuarios también pierden información cuando solo pueden ver una parte de una página, ya sea porque tienen acceso a la página de palabra en palabra (habla sintética o pantalla Braille), o una sección a la vez, o bien por restricción temporal o espacial (pantalla pequeña o una pantalla ampliada). Por lo tanto, sin información de orientación, es posible que los usuarios no puedan comprender tablas, directorios, menús, etc. muy grandes.

Es necesario continuar investigando sobre las necesidades de los estudiantes, maestros, padres y administradores de tecnologías de asistencia en educación especial. Además, es fundamental incluir investigaciones sobre la evaluación de las necesidades existentes y cómo satisfacerlas, y sobre la evaluación de las implementaciones de tecnología de apoyo. McKnight y Davies (2013) sugirieron en su encuesta sobre el proceso de aprendizaje que se tome en cuenta lo siguiente: a) las necesidades y habilidades de los niños, b) el rango de habilidad de la tecnología, y c) el ambiente de aprendizaje. El número de personas que pueden aprovechar estas investigaciones aumentará significativamente si los resultados de los estudios sobre tecnologías de asistencia se notifican en congresos y simposios, así como en un sitio web común. Además, es fundamental que a los educadores en formación inicial capacitados en educación

especial y que estudian programas de educación de pregrado y posgrado se les ofrezca la información y las habilidades sobre Tecnologías de Asistencia y sobre el uso de computadoras, tabletas, etc.

La web hoy en día es una plataforma a través de la cual se pueden brindar una variedad de servicios siendo el e-learning uno de ellos. Desde la creación de la web, su principal objetivo es el acceso universal. Cuando la web se convirtió en un medio mucho más rico (que incluye imágenes, vídeos, interacción de datos, etc.), el acceso para personas con discapacidad comenzó a ser más difícil. Por lo tanto, el W3C y especialmente WAI se ha hecho cargo del proyecto para emitir las instrucciones pertinentes sobre la base de qué contenido de un sitio puede ser accesible para discapacitados.

Aunque las tecnologías web están evolucionando a un ritmo rápido, la pregunta que surge es si los estándares de accesibilidad pueden seguirles el ritmo o si las instrucciones de accesibilidad pueden seguir los desarrollos. La respuesta clara es que deben hacerlo. Hoy día existe este nuevo paradigma sobre la forma de pensar en temas de accesibilidad. En lugar de controlar el resultado, se debe controlar el proceso de su producción. Más específicamente, las herramientas que producen contenido, la forma en que una empresa desarrolla sitios web y los estándares y procedimientos que deben seguirse.

En resumen, los estudiantes con discapacidades pueden usar y usan las tecnologías informáticas y de la información para ayudarlos a tener éxito en la educación postsecundaria. La falta de conocimiento sobre cómo usar tecnologías informáticas especializadas por parte de los estudiantes y el personal que supervisa la tecnología es una preocupación importante. Si se va a utilizar con eficacia, la formación sistemática debe verse como parte de la inversión global en el propio equipo. Es extremadamente importante que las aplicaciones de software sean accesibles para todos los ciudadanos de la Sociedad de la Información (SI), incluidas las personas con discapacidad a través de una variedad de dispositivos diferentes. Finalmente, las tecnologías informáticas pueden permitir o generar problemas para los estudiantes discapacitados. Se requiere poco esfuerzo para que los materiales sean accesibles para todos los estudiantes. Además, es probable que los estudiantes sin discapacidad también se beneficien de las modificaciones recomendadas. Por último, se debe tener en cuenta que **la educación inclusiva** no es una etapa a la que debamos llegar, sino un proceso continuo para que todos los alumnos aprendan y participen juntos.

"Disability is not Inability."

Introduction

To begin with, the goal of special education for people with disabilities is to introduce and boost academic skills as well as to strengthen the quality of the people's life and enhance their independence and self- determination (Saridaki &. Mourlas, 2014). Research in both pedagogical science and psychology, conclude that individuals with disabilities can become less dependent and express their choices and preferences, even if they will never manage to live completely independently (Heward, 2011).

Perelman mentions that 10% of any society's population deals with some type of disability and 3% of those are diagnosed by mental disability (Ministry of National Education, 2007). Department of Health White Paper states that people with learning disabilities are among the most socially excluded and vulnerable groups in Britain, stressing that this finding is likely to coincide in other countries, as well. Very few are being occupied and live in their own houses. Nowadays, a large number of them do not stay in institutions, yet in the family home and, even though their needs might differ, there is a prediction that they will accomplish more independence and more inclusion in society.

Fast developments in information technology have significantly changed the way of living for many individuals during the past decades. The impact of ICT (Information and Communication Technologies) in education has been reviewed since the beginning of the 1970s, where more and more Educators convinced that ICTs support students in formal education. Nonetheless, the majority of software, educational games, and web sites that students with disabilities interact with, are built with no consideration of special needs, ending up with those applications being inefficient or fully inaccessible (Saleh et al., 2013).

The prime role of ICTs in special education should be to meet a diversity of subjective learners' needs through a suitable technical and technological infrastructure. Every educational activity, such as organizing a curriculum, dealing with assessment, and communicating with students might be extended and boosted using suitable learning platforms. Technology as an educational tool has been well reviewed, as can be seen in Somekh's research, reflecting its benefits and its possible drawback; and not only within education for children, but also in teachers' instruction. Schools and universities have espoused certain technological tools, like mobile devices or robots, to boost quality and diversity of their teaching methods (Trigo & Brown, 2014).

It is generally agreed that education is a universal right, indicating the need of validating **accessibility** as a high priority condition every time technologies are brought into the educational process. Differently, the equality of opportunities in education for all students is being in danger (Torrente et al., 2015).

Marginalization and exclusivity, especially from public free education, should be combated. However, the magic recipe is finally found and heard in the name: "i**nclusive education**"! Students of all intellectual levels and abilities should share the same class in the context of the "progressive" concept with the slogan: "**one school for all**!"

The present PhD thesis focuses on students with disabilities, the benefits of ICTs tools as well as web and content accessibility issues. More specifically, the goal is to explore how confident Educators feel using ICT tools relating to all kind of disabilities in special and mainstream school setting. Moreover, to define views and feelings regarding the benefits of Assistive Technologies and how developers can create accessible web and non-web content for all kind of disabilities. Lastly, to determine how Educators feel on website accessibility tests and how familiar are with the general WAI / W3C accessibility guidelines in order to create websites with high accessibility parameters.

In the first chapter there is a brief historical and conceptual review clarifying the term disability. More particular, cognitive and intellectual disabilities, physical disabilities, auditory, speech and vision disabilities, as well as the term of inclusion education so that the reader can better approach the subject of current work. The role of Educators is being highlighted, as well as the benefits received from inclusion in typical school settings, and the obstacles that might arose. Moreover, in the first chapter, it is being analyzed the Assistive Technologies that support the learning process of disable students and teaching methods that enhance their training. Lastly, it is being pointed out the website accessibility tests, the general WAI / W3C guidelines for website accessibility in order to create websites with high accessibility parameters and a reference of various institutions related to the study and research of website accessibility.

The second chapter concerns the survey conducted. More specifically, it is described in detail, the purpose of the study, the state of the study, analyzing the objectives to be achieved, the hypothesis of the study as well as the method, the data collection instrument and the characteristics of the population of the sample. Chapter three introduces the result of the conducted study. In the analysis of the data collected, descriptive study was conducted, presented the results in tables and charts. Apart from Descriptive study, Comparative Statistics (T-Test) Correlation of numerical Cross variables (Correlation) and Statistical Forecast (Regression) study are taken place, as well. Finally, chapter four outlines the overall conclusions of the PhD thesis while suggestions for future research are introduced.

"Tech gives the quietest student a voice!"

Jerry Blumengarten

CHAPTER 1º

The use of ICT tools for promoting Learning process of Students with Disabilities and Accessibility Issues

In this chapter, it is being described in detail the issue of disability including the challenges that disabled people faced. In addition to this, there is an elaborate description of the terms Special Education, as well as the inclusive education. Furthermore, ways supporting the concept of special education system are also mentioned. Additionally, some challenges regarding access to a computer software application faced by disable users are pointed out and the most commonly used Assistive Technologies. Guidelines are also mentioned explaining how application content can be made accessible to people with all types of disabilities.

1.1. Definition of Disability

The Disability Discrimination Act (DDA) point out that a human being with disabilities either physical or mental impairment deals with a considerable and long-range adverse consequence on his or her ability to go through with normal everyday activities.

In general, there is not one universally agreed definition of the term "disability". It is agreed that the term "disability" does not concern a person's impairment that "disables" him or her. Unfortunately, even in twenty first century, there are many everyday cases where society acts in a "disabling" way towards people with disabilities, creating discrimination and barriers to participation (including participation in education).

The term disability is referring to physical, cognitive, mental, sensory, emotional, developmental impairment or the combination of these. A disability might be diagnosed either from birth, or evolve during a human's lifetime.

Disability is an umbrella term, containing impairment, activity limitations, and participation restrictions. The word impairment is referring to physical malfunction or body structure. Moreover, the constraint to participate in everyday life situations because of an impairment also belongs to the umbrella of disability. Hence, disability is a complicated fact, dealing both with attributes of a person's body and attributes of the society in which the person lives (World Health Organization).

From socialization point of view, an individual with disabilities deals with the danger concerning insecurity for his/her abilities, anxiety to copy with several situations and fear of social rejection when he or she fails to accomplish a task. The danger might be interspersed via the repetition of tasks to be mastered, accumulating the confidence of a person and thus boosting the social relationships he or she establishes with other persons (Tomé, Pereira, & Oliveira, 2014).

Education is one of the most important fields of development children's lives, including children with special educational needs (SEN). Over the years, in bibliography there are many definitions showing that the term "special educational needs" imply various things to different countries (Drigas & Ioannidou, 2013). According to Greek legislation, the term "special education needs" is an umbrella term containing people with intellectual impairment or immaturity, hearing and vision impairments, neurological or orthopedic problems, autism or others developmental disorders, specific learning difficulties, such as dyslexia, dyscalculia, complex cognitive, emotional and social difficulties or need for specialist educational approach and care for a certain period or for his or her entire duration school life (Law. 2817/2000 Ar.1 par.2).

Figure 1: *Students-with-Disabilities-Parenting-College-Students*
Retrieved from: https://cutewallpaper.org/download.php?file=/21/disability/Students-with-Disabilities-Parenting-College-Students.jpg

Disability statistics from the World Bank show that more than 10% of the world population appears to suffer from some type of disability (Saleh et al., 2013). The *National Conflict of Persons with Disabilities* states that the coexistence of many disabilities limits the person's autonomy and communication capabilities while his or her life depends on others, family, society, the state. The IDEA (Individuals with Disabilities Education Act) definition adds the combination of disabilities to lead to such serious educational needs that cannot be met by specific training programs involving only one of the disorders (William et al., 2009).

The difficulties of people with learning disabilities can be cognitive, sensory and motoric. Many individuals find it difficult to communicate their needs, to move their bodies freely, to interact with the environment and understand the abstract ideas and concepts (Horn & Kang, 2012).

Kartasidou (2005) reports that a person with severe disabilities could be classified as:

- a person with severe epilepsy attacks and some physical disability;
- a blind person with severe physical disability and mental retardation;
- and a person with mental retardation and autism.

Nonetheless, cognitive and intellectual disabilities are related, the terms present different effects and conditions. In the next paragraphs, an attempt is made to clarify the terms, describing similarities and differences.

1.2. Intellectual Disabilities

Intellectual disabilities(ID) are complicate and various. The barriers that individuals with intellectual disabilities might face are diversified and widely reliant on the kind of disability (Torrente et al., 2015).

The term Intellectual Disability refers to a developmental disorder that influences the adaptive behavior and intellectual functioning of an individual (AAIDD, 2013). People with intellectual disability are typically referred to as though they were a homogenous group with regard to different conditions (Winnick, 1999).

The term Intellectual Disability concerns specific cognitive difficulties that ensue in low Intelligence Quotient (IQ) score and serious problems in conceiving new concepts and situations, like developing social skills. It is very challenging for them to perceive and apply new knowledge. Individuals, diagnosed with intellectual disabilities belongs to people that in previous years has been referred to as "mentally retarded" or "mentally challenged".

Intelligence might be defined as the ability to gain and apply knowledge in an adaptive situation, while cognition is referring to awareness and the ability to learn in particular.

With reference to specific variables (IQ level, attention, cognitive action, development etc.), these people are categorized to three essential groups, termed:

- educable (mild level);
- trainable (moderate level); and
- gravely mentally disabled persons (Geiger & Ringlaben, 1992; Çetin & Güven, 1999; Umansky, 2004).

Mild level (educable) mentally disabled individuals represent 88% of all individuals diagnosed with mental impairment (Eripek, 2009). The concept of "educable" exhibit the retardation in the academic skills of a person (Aral & Gürsoy, 2007).

The instant definition of "intellectual disability" or "learning disability", as mentioned by the Department of Health of the UK, account for a limited ability to comprehend new or complex information, together with an impaired social functioning; that began prior adulthood, generating a lasting effect on development (Trigo & Brown, 2014). Individuals with Intellectual Disabilities appear low intellectual abilities and limitations in behavioral and social functioning. A child with ID can be diagnosed in a very early stage of his or her life, whereas each individual with ID has individual characteristics (Tsikinas et al., 2018).

The number of people with intellectual disabilities is being augmented in the whole world. A latter study mentions that between 10 to 15 per cent of children in normal school in Australia appear some learning difficulties (Saleh et al., 2013). As McGuire (2001) mentions, in terms of their learning abilities usually students with intellectual disability have some of the following features in many different combinations. Individuals with intellectual disability learn at a slower pace than typical children. There are complex skills that a learner with intellectual disability is not able to conquer. Those that he or she can conquer will require much more time and effort. Many students will gradually lose a conquered skill if they do not use it for a long time (McGuire, 2001).

It is not self-evident that a skill conquered in one particular environment can be used elsewhere. Most people with intellectual disability have difficulty generalizing and transferring a skill from one context to another. Persons with intellectual disabilities often face difficulties in generalizing skills in different environments and difficulties in switching from one activity to another or from one environment to another. As a result of this, individual with multiple disabilities need extensive and continuous support to avoid exclusion and enjoy a quality of life similar to that enjoyed by all other students (Heward, 2011).

A person diagnosed with Down Syndrome (DS) deals also with learning difficulties. In particular, the most serious difficulties afflicting people with DS are related to the cognitive side. Hence, it is particularly relevant to improve the methodologies aimed at developing cognitive capabilities and skills (Ripamonti & Dario, 2011).

It is necessary that every person with mild to moderate intellectual impairment be carefully and precisely diagnosed of his/her mental condition and development level. A refined intellectual evaluation of the students, their difficulties and its capabilities might define proper strategies to, in part, overcome learning difficulties (Curatelli et al., 2013).

The question of supporting individuals with intellectual disabilities has been researched since long. Many tools have been developed to assist a disability in an individual and to offer support. Owning to higher level of healthcare and education, the quality of everyday life of people with mild mental retardation (MID) and moderate learning difficulties (MLD) has been apparently improved. Students with MID and MLD are being supported by Assistive Technology (Saleh et al., 2013).

Students with intellectual disabilities most of their stay at school might need personalized specialized support to meet the requirements of the training program. Some students might require some level of support all day. These students will most likely need some sort of Assistive Technology that will allow them to participate in the various activities and often need external assistance to be able to use this technology (Papastergiou, 2017). The above statement does not mean that students with heavy intellectual disabilities cannot be included in the mainstream school context. It means that schools have to be equipped with the appropriate equipment to provide them the constant support that they need (Coyne, Simonsen & Fraggella- Luby, 2008).

The co-operation of various specialties of Educators is appropriate, in the case of children with severe intellectual disabilities, it is necessary for their qualitative and effective education (Papastergiou, 2017). Black & Wood (2003) state that computer technology could support MID/MLD people develop confidence and motivation via originative activities and web browsing. In addition, computer technology presents benefits such as errorless learning, patient feedback, instant feedback, self-paced learning, and independence learning.

Students with MID and MLD usually deals with meaningful constrains both in intellectual functioning and in adaptive behavior during conceptual, social and practical processes. Explicit cognitive limitations usually appear in areas such as memory, attention and communication (Saleh et al., 2013).

Furthermore, it should be taken into consideration that individuals with intellectual disabilities do not behave in the same way as others in situations under pressure. Thus, it is essential for them to be provided with a pressure-free environment. On the whole, stimulating and innovative environments that capture their attention and motivate them to activities of learning works more efficiently than traditional methods (Tomé, Pereira, & Oliveira, 2014).

Individuals with intellectual disabilities deals with difficulties such as functions of attention, memory, reasoning, language, perception, problem-solving, conceptualizing, self-regulation and social development. This is because of not being able to acquisition knowledge and competence development. Therefore, they face great difficulty in associating and understanding concepts and behaviors. (Tomé, Pereira, & Oliveira, 2014).

Regarding the learning methods of students with intellectual disabilities, they differ from the learning methods of typically developed individuals. The most efficient way for individuals with intellectual disabilities is to involve role/mimic playing, educational cards, conversation, reading and creative work (Tsikinas et al., 2018). Moreover, visualization is urgently needed for children with intellectual disabilities, as one of their limitations is studying things that are abstract, the effort to visualize a material can ease their understanding.

Another important factor that should be mentioned is that intellectual disabilities might accompany physical disabilities, generating a higher negative impact on their everyday life. This sometimes blocks them from accomplishing activities that are common for a person of their age. In order to support those individuals in their daily lives, and offer them opportunities closest to the ones of their more able peers, the use of Assistive Technologies is essential (Trigo & Brown, 2014). Sometimes intellectual disabilities might appear together with motor control implications and therefore the traditional equipment commonly used might not be the most suitable for this population (Tomé, Pereira, & Oliveira, 2014).

Infdividuals with intellectual disabilities have the right and most of the times, the capabilities, to learn, to communicate, to take care of themselves and of course to be members of society (Wehmeyer, Agran & Hughes, 2000). Finally, students with intellectual disabilities may be able to develop with appropriate education, not only their functional, social and emotional skills, but also to acquire purely academic skills (Katz & Mirenda, 2007).

1.3. Cognitive Disability

Cognition is referring to the processes that concerns thinking and experiences. More specifically, cognition concerns "a process of identifying, selecting, interpreting, storing, and using information to make sense and interact with the physical and social world, to conduct one's everyday activities, and to plan and enact the course of one's occupational life" (Kielhofner, 2009, p. 85). In literature, researchers frequently mention different cognitive fields like perception, attention, memory, language, planning, organizing, having control and assessing situations (Wahlund et al., 2011). Most of the above skills alleviate within normal aging. Take for instance, short-term memory and how people learn, how quickly people think (Rönnlund et al., 2005, Fastbom et al., 2014).

In case, someone deals with cognitive problems his or her performance capacity is low, leading to limited codetermination and alleviation of well-being. Particularly, cognitive disabilities are blocking learning process. A child dealing with this type of disability faces difficulties in perceiving, recognizing, choosing, understanding, etc. Moreover, a person with cognitive disabilities finds difficult focusing for any significant period of time or appears short-term memory. Other difficulties of this type of disability are problem processing, comprehending number quantities or imagining shapes. In order for children to be diagnosed with cognitive disability, impairments in intellectual functioning and adaptive behavior need to be detected. Finally, the symptoms must be present not after the age of 18.

1.4. Vision Disabilities

This category includes people with:

Blindness: Concerns a significant irreversible loss of vision in both eyes. The blindness can be congenital or acquired. The human is considered as blind when he or she can be oriented on the environment, when he or she cannot move without someone's else assistance. Blind users typically use screen readers and export the information to a speech synthesizer and / or Braille display in order to be able to "read" what appears on the computer screen. Some blind users using text browsers such as Lynx[17], or software to convert text to speech.

Some difficulties encountered by users with blindness in software application are:

- complex images, such as charts or diagrams that do not include sufficient description;
- video not described with text or audio;
- tables that cannot be read serially (cell-cell or in linear way);
- frames that do not provide alternative non-use (NOFRAME alternative) or do not contain explanatory names;
- browsers and authoring tools that do not support all keyboard commands;
- use of no fixed text formats, which means that screen readers may have difficulty to interpret.

Reduced vision**:** There are many kinds of reduced eyesight, such as reduced *visual acuity* (vision is not intense), *vision tunnel* (the loss of peripheral vision with retention of central vision,), *central field loss* (vision around the central visual field) and *blurred vision*. Some users with visual impairments use very large monitors and increase the font size and the images of the system. Other people use certain combinations of colors, font and background. Moreover, users with low vision often make use of screen magnifiers or they adjust the order of presentation in order to be able to read comfortably.

[17] http://www.linuxfocus.org/common/src/article111/index-en.html

The problems faced by visually impaired users to interact with several software applications include:

- software applications with absolute font sizes that do not change easily;
- software applications that due to inconsistent layout, the navigation is difficult when magnified;
- software applications or images which have low contrast color and not easily changed;
- text presented as photo and problems occur when growing is occurring;

Color blindness: The inability of the eye to distinguish colors. A frequent problem of color blindness is the difficulty in distinguishing between red and green, or between yellow and blue.

The difficulties encountered by the users with color blindness include:

- color used as the only item to highlight text in a software application;
- text that does not show sufficient contrast with the color or pattern of the background.

1.5. Auditory Disabilities

This category of users includes individuals who are either completely deaf or have hearing difficulties in one or both ears.

Deafness: A significant and irreversible hearing loss from both ears. The native language of some deaf is sign language, and perhaps (or perhaps not) to comfortably read or speak clearly a written language. In order to use a software application, many users fall into this category count on subtitles for any audio content.

The difficulties encountered are mainly:

- lack of subtitling;
- lack of images associated with the content (content-related), at software applications full of text, that may not be understood by those who have as native language the sign language;
- lack of clean and simple language;

- requirements for voice input.

Hearing Difficulty**:** Partial reduction in the ability to detect or understand sounds. Users who belong to this category count on the use of subtitles to any audio content of a software application. Furthermore, those users may need to enable / disable the display of subtitles in an audio file, or adjust the volume. The difficulties encountered are mainly confined to the lack of subtitles for any audio content.

1.6. Speech Disabilities

Speech disabilities include difficulties in producing speech or in terms of loudness or clarity. Users who belong to this category and want to use part of a software application that is based on speech recognition, they should be able to use an alternative mode of entry such as entering text via the keyboard.

The barriers of users in this category include use of software application that require interaction based on speech and have no alternative way.

1.7. Physical Disabilities

This category relates to a wide range of individuals with different types of physical impairments. Regarding the use of software, referring to persons with reduced mobility of the upper limbs or reduced manual skill and problems of cooperation. All these cases may have been caused either congenital or due to a disease such as Multiple Sclerosis and Parkinson's. In this group of people, they also belong and those who have a temporary break of a limb.

Motor Disabilities: This category includes weakness, muscle control restrictions (such as involuntary movements, lack of cooperation, or paralysis), sensory limitations, joint problems or loss of limbs. Some physical disabilities delas with pain that prevents movement. These conditions might affect the arms and shoulders, or other body parts, as well.

Some assistive technologies used by people with mobility problems are: custom mouse, keyboard layout with appropriate keys, which fit to the range of motion of their hands, voice recognition software, etc. The main difficulties encountered in using several software applications are:

- options with limited response time;
- authoring tools that do not support alternative access keyboard commands for mouse;
- forms that cannot be accessed from the keyboard (tabbing) in a logical sequence.

1.8. Special Education

Special education occurred as a separate system of education for children with disabilities outside the regular school setting, based on the assumption that children with disabilities have needs that could not be addressed within typical schools. Special education exists all over the world in the form of day, or boarding, schools, and small units attached to mainstream schools.

1.9. Special School Context

In Greece, special schools are usually organized according to impairment categories, such as schools for blind or deaf children, children with learning difficulties, behavior problems, physical and multiple impairments. Separate education for disabled children has resulted in separate cultures and identities of disabled people, and isolation from their homes and communities. "Specialist" teachers are also divided into categories. Those attenting additional training, or experience, Braille or Sign Language Course, etc. Further separation exists in universities, in government bodies, parents' associations and disabled people's organizations.

More poor countries are only capable of providing education for a tiny minority of disabled children. This generally takes place in institutions located in cities, or other places where children might be far from their hometown. This weakens family bonds, alienates them from family life and future employment in the community, and can lead to abandonment. Disabled children, especially girls, are more vulnerable to physical

and sexual abuse. This vulnerability is increased if they are educated in residential institutions.

Advantages	Disadvantages
Special schools can be developed as centers of excellence.	Special schools are usually not available in the child's immediate environment.
Concentration of expertise on specific impairments.	Expertise is only available for a small group of children.
Student–teacher ratio enables each child to have more attention.	System of teaching is very expensive. It is therefore not affordable, or sustainable, for all children.
Children grow up with their disabled peers and develop a common culture.	Children find it hard to re-adapt to life with their families, peers and communities.

Figure 2: *Advantages and Disadvantages of special school settings.*

The cost of special education per child is too high for most countries. Governments are recognizing the need to develop a more affordable system which will provide quality education for all students. Increasingly, those working in special education are seeing the need to make links with the mainstream in order to move towards to more inclusive practices.

1.10. Small Units of Special Schools Attached to Mainstream Schools

Small units for special education are sometimes attached to mainstream schools. These are usually staffed by a special Educator, who teaches a class of children, of mixed ages, in a separate classroom on the school campus. The children might spend all their time in the unit, or might be integrated into mainstream classes at particular times, for instance sport, or some academic subjects.

The advantage of a school system which has special units is that services can be provided closer to a student's hometown, and in various locations. Students are, therefore, more likely to be capable of attending school with their peers and be part of the community. However, the disadvantage is that it can increase segregation for students who might have previously been included in mainstream classes. Furthermore, it might limit studnets' learning opportunities due to a wide range of ages, impairments and learning needs sometimes being grouped together.

1.11. Inclusive Education

The concept of *inclusive education*, in particular how it is applied to disabled students, and how this differs from *special education* is described below. Identifying the aptness or "deferential capabilities" of every student, the education of students with special educational needs in inclusive schools turn to be a shared accountability between Educators, Headmasters, Special Educators and every stakeholders involved, in general (Ahmad, 2015a; Praisner, 2003). In addition to this, claiming a shift in attitude, availability and accessibility of suitable infrastructure, need-based methods and materials for instructional delivery, assessment and evaluation; and the highly obvious subject of acceptance in every level in the education system are also taken into consideration (Ahmad, 2014; 2015b; Stainback and Stainback, 1984).

Addressing the learning needs of each student, particularly focusing on problematical fields such as marginalization and exclusion. Inclusive education suggests every student, with or without special educational needs, to be able to learn along with others, providing access to common pre-school provisions, educational setting with collaboration of support services. It is important for all learners to be offered an education system that absorb the needs of every student and adapts itself to meet those needs, making sure that all stakeholders feel convenient with diversity and see it as a challenge rather than an obstacle.

Inclusive education is a process of increasing the participation of all students in schools, including those with disabilities. It is about restructuring the cultures, policies, and practices in schools so that they respond to the diversity of students in their locality. It has the following characteristics:

- acknowledges that all children can learn;
- acknowledges and respects differences in children: age, gender, ethnicity, disability, etc;
- enables education structures, systems and methodologies to meet the needs of all children;
- is part of a wider strategy to promote an inclusive society;
- is a dynamic process that is constantly evolving.

Inclusive education is different from special education, which takes a variety of forms including special schools, small units, and the integration of individual children with specialized support.

The philosophy of inclusion education according to Peters (2007) is based on the inalienable right of all people to equal access to qual education structures that develop their abilities and skills while respecting their dignity (Papastergiou, 2017). Important issue involved in Special Education is the inclusion of children with special educational needs to school context with children without special educational needs.

Figure 3 : *Prepare our students with disabilities to develop their fullest potential. Retrieved from: https://eachoneteachone.net/project/goals-and-objectives-of-special-education/*

Curatelli and his associates also agreed that one of the biggest challenges of today's society concerns the transition from integration to inclusion of students with intellectual disabilities (Curatelli et al., 2013). This change of course cannot be done from one day to the next. It can be described more like an evolutionary process that has gone through many stages. Inclusive learning practices allow individuals to learn at their own pace according to their emotional, cognitive and physical capacities.

Removing and eliminating the social and educational inequalities of individuals with disabilities, is a subject of study and the objective of many national policies, particularly in recent years at a global level. While, up to the middle of the 20th century, educational models promoted separation, i.e. the attendance of students with disabilities in special school settings and students attending in mainstream school settings, modern approaches have changed significantly and reinforced the need for the creation and operation of a school for all.

The scientific and educational community appeared to be occupied very strongly regarding the educational model and the logic of integration. Admittedly, integration is not considered by now to be an outdated approach but remains at the heart of important discussions among scholars (Sebba & Ainscow, 1996).

At both european and international level, contracts and declarations have been ratified such as the Salamanca Declaration (UNESCO, 1994) or the United Nations Convention on the Rights of Persons with Disabilities (2006), which accept and promote educational inclusion. In the countries of the European Union, in America, Canada and Australia, past integration programs have begun to be reviewed in recent years, while at the same time adopting principles and implementing laws that are designed to promote educational inclusion and reflect the basic aspects of the rights and principles identified in the international conventions (Zoniou-Sideri, Vlachou, 2006).

A student with learning disabilities such as cognitive and intellectual disabilities can gain multiple benefits from his or her inclusion in the mainstream school. Those benefits have been highlighted by several researchers (Downing & Eichinger 2003; Katz & Mirenda 2002, Papastergiou, 2017). Many people focus mainly on the benefits in the area of social skills, but research shows that teaching children with cognitive and intellectual disabilities in typical class can positively contribute both to the development of academic and other skills (communicative, behavioral, motor) (Downing & Eichinger, 2003).

The difference of inclusive education as opposed to other educational options is that it is related to the establishment of an education system that opposes the exclusion of any student and not to the effort to ensure the attendance of children with disabilities in the mainstream school, is an envisaged try by integration and inclusion. This is also the determining factor that makes implementation of inclusion principles one of the largest challenges to every education system (Acedo, Ferrer & Pamies, 2009). It is not a different model of special education but a completely different approach to the education as a whole. An approach that addresses students' individual differences not as problems, but as opportunities for enriching the learning process (Unesco, 2005). It ultimately aims at providing more appropriate education for all children, with and without disability. In an educational context, where all children can evolve according to their skills, abilities, and talents (Papastergiou, 2017).

The philosophy of inclusion is now permeating all UNESCO programs inspiring and guiding principle for the development of education for all (Unesco, 2014). According to UNESCO, inclusion is an attempt to respond to different learners' educational needs through increased participation in learning. It is associated with a variety of changes and adaptations to the content of teaching, approaches and strategies to meet the educational needs of all students and with the predominant perception that a general education system has the ultimate responsibility for educating all children (Winter & O 'Raw, 2010).

Specific methods and strategies have been recorded in the cognitive field of special education enhancing the inclusion of children with disabilities. The curriculum adaptation, activities, assistive technologies, group teaching and classroom support are some of them (Downing & Eichinger, 2003; Papastergiou, 2017). However, the inclusion of children with disabilities in a mainstream school context does not cease to be a particular challenge both for the education system and for all the teachers, parents and students involved (Papastergiou, 2017).

Despite the indisputable benefits that arise from the inclusion education (Karvonen, Wakeman, Browder, Rogers, & Flowers 2011) difficulties are emerging over adaptation the learning process in ways that allow those students to participate equally (Papastergiou, 2017).

According to Forlin (1995), the majority of Educators (95%) believed that children with mild disabilities should be partially integrated into the mainstream class, while only a small percentage of teachers (6%) could accept the full inclusion of children with severe disabilities (Papastergiou, 2017). Also, it is stated that Educators unanimously rejected inclusive education for children with severe disabilities. According to Lifshitz and his associates (2004), Educators' attitudes towards inclusion cannot be independent of the form and the severity of the disability of students as they dictate the kind of educational support the students' needs in the classroom.

Young people, for the most part, display a sense of social justice, a sense of justice, optimism, empathy - a deep desire to make a difference. In schools, efforts are made by students to be models of good behavior. The carpet of education wraps around the child as a whole, around the development of the individual and the celebration of individuality, around the character and the active citizen, around the forging of relationships.

Inclusion goes beyond the practice of teaching. Inclusion is a way of thinking, a culture, a charisma which, when embodied as non-negotiable practice in the school environment, ensures astonishing results. It involves everyone's access to learning through diversification, designing customized curricula, respecting the environment and culture, forging relationships.

The inclusive school honors and recognizes the natural presence of diversity in all areas of human life and seeks to sensitize all members of the school community to recognize that it is normal to develop a multitude of different lifestyles, customs, traditions and visual angles; that people have different abilities; that they come from different backgrounds and that this variety of human life is wealth for all. The cognitive practice takes place in a context of genuine interest for the fellow man and this interest is worth!

There is a noticeable need for researchers, practitioners, and other stakeholders to determine procedures and practices to encourage the development of means and strategies for technology integration, and strive to work on issues concerning the use of technology, for efficient inclusion of students with disabilities within the mainstream education setting, making sure that they are entitled to the same high standards and efficient teaching that is available to the non-disabled students. It is necessary to pay attention and invest on the strengths and capabilities of learners, with the essential support and assistance, offering space to their skills in order to address their "disabilities".

1.12. Supporting Change of Education System

School improvement might be the consequence of the introduction of integrated education or it might provide the opportunity for integrated education to take place. However, whichever route is taken, school improvement shall occur.

In many countries, the training of special education teachers is organized separately. If all Educators are to be expected to teach children with a range of abilities and impairments, their training should reflect this. Similarly, if the role of specialists (e.g. Speech therapist, Psychologist) is to change within an inclusive system, they also need more appropriate training to enable them to take on the role of supporting local schools in developing more inclusive practices.

The curriculum and exam system need to be relevant to all children. Where there is a flexible curriculum, all children have a chance to learn and benefit from education, and their achievements can be recognized.

For the description of the joint study of children with and without special educational needs in the typical school, terms such as integration and inclusion have been used and are still in use. Although these terms are not synonymous but conceptually and semantically differentiated, it is often seen in bibliography to be confused, overlapped and presented as identical, and sometimes differing views on their content and meaning are being stated (Vislie, 2003).

We recognize that, in some languages, it is not always possible to make the distinction between integration and inclusion. Nevertheless, an understanding of the distinction in English is helpful, and is important in promoting more inclusive practices. A simple distinction is:

> *Integrated education* is about disabled children going to mainstream schools (i.e., the focus is on attendance rates).
>
> *Inclusive education* is about disabled children learning effectively once they are in mainstream schools (i.e., the focus is on quality of learning).

In integrated education the child is seen as the problem. The individual, or medical, model of disability determines that the child has to be changed, or rehabilitated, to fit the school system and society. For instance, a deaf student might wear a hearing-aid and be expected to learn to speak in order to fit in. However, Educators and other students are not expected to learn sign language, or other forms of communication. A student presenting learning difficulty is expected to pass standardized tests in order to progress through school, otherwise he or she will repeat the class, or will be forced to drop out.

In inclusive education, the system is expected to change, not the child. Inclusive education has grown out of the social model of disability. It recognizes that all children are different, and that the school and the education system need to change in order to meet the individual needs of all learners, with and without impairments. Inclusion does not, nevertheless, mean assimilation or making everyone the same. A key ingredient is flexibility, acknowledging that children learn at different rates, and that teachers need skills to support their learning in a soft way. In the majority of cases, students look just

for good, clear and accessible teaching. This includes the use of different methods to respond to children's different needs, capacities and rates of development.

The idea of integration provides for the attendance of students with disabilities in typical education schools. However, these children will engage in classroom work to the extent that their abilities allow them and will help with personal work by a qualified Educator. (Kobos, 1992). Inclusive education involves each student, with its particularities, and recognizes the right to accept equal education with all students of the same age, respecting his or her abilities and weaknesses (Hammond & Ingalls, 2003).

"*Integration* means acceptance, within an already functioning-with its own physical and social group dynamics of a position by one person or a group of people having different social, biological, psychological or economic characteristics and providing all kinds of assistance inside and outside the group to maintain that position as well as acquiring a role or roles within this group "(Zoniou-Sideris, 2006).

However, the critics of the idea of integration end up being one of the key disadvantages of integration is that it only refers to the type and form of the educational context in which students with disabilities are studying, and does not provide information on the quality of the education provided (Sebba & Ainscow, 1996). In addition, in this model it is ending up with the main purpose of adapting the student to the program and not the program to the particular educational needs of each student (Mittler, 1995).

The critique of the model of integration is that it predicts unilateralism by students with disabilities adaptation to the framework and model of standard development students. It does not contain beyond the element of physical presence in the general school, the wider educational and social inclusion of these children and does not take into account their real needs (Zoniou-Sideri, 2006).

The integrated education is regularly accepted as a stepping-stone to inclusive education. Nonetheless, the major limitation of integrated education is that as long as the school system remains rigid, only certain disabled children can be integrated. Some disabled children can never be "prepared" or "rehabilitated" enough to be accepted in a traditional mainstream classroom.

Today, the predominant trend towards the education of students with disabilities is the model of inclusion. An increasing number of countries recognize the right to participate equally in general education for disabled people and adopt inclusion as a dominant trend in their education policy (de Boer, Timmerman, Pijl & Minnaert, 2012).

In recent years, Greece is mapping the inclusion of children with special educational needs in typical school setting. Surveys have not gone a long way in Greece, but they are still being built conditions for the institution of inclusive education. The presence of special Educators in the inclusive schools are imperative, as with specialized knowledge and their practices, they can manage with more professionalism situations that appear daily in context of the school community and can inspire the rest training staff to become actors of inclusion education and to accept diversity and professing **one school for all**. In particular, the role of the school principal has changed with regard to the new task of ensuring that the educational environment is effective and provides equal opportunities to all students (Georgiou, Papayianni, Savvides & Pashiardis, 2001).

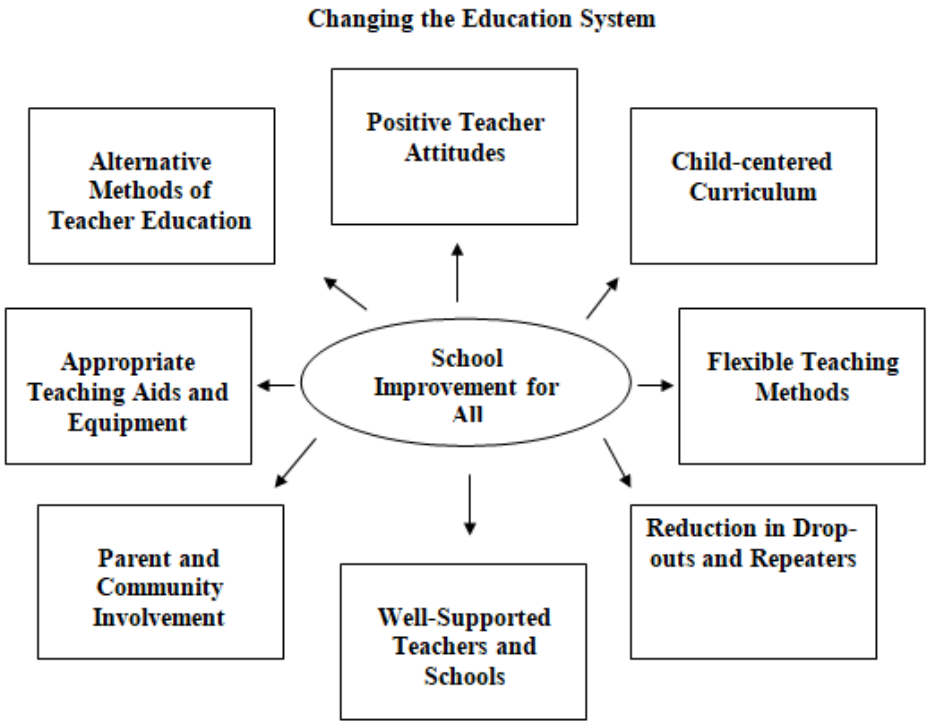


Figure 4 *: Changing the Education System.*

The concept of inclusive education and its definition lies in the equal treatment and education of children with disabilities through their inclusion in mainstream school settings. Knowledge and education are a good thing to be given to all children regardless of a social group, but at the same time they are able to understand it, to assimilate it and evolve in line with evolutionary patterns.

However, the practical implementation of inclusive education requires a lot of perseverance and insistence from all stakeholders in this process, since the coexistence of two parallel worlds is not an easy task. The community of Educators needs to make an effort to integrate students into the classroom in any particularity in a calm and silent manner so that no one is harmed by respecting the individual rights of every individual who acts and does in modern society in the 21st century.

Rights acquired after much effort and struggle of families who grew up and raised children with special needs supported by collective organizations that claimed things for a better future. Understanding and accepting diversity must also be the eyes of the theoretically healthy-bodily and spiritual-children, as they are also recipients of the feedback of successful inclusion.

Difficult situations of conflict - with the basic criterion of honesty and spontaneity justified in these ages - were and will exist, that is why cooperation of all the specialties of Educators who build a modern school system is essential. In my own personal view, the basic and essential effects of inclusive education are long-term. The degradation of the former behavior against disability in Greek society and the reconstruction of a new model is the black spot that this cohabitation seeks to correct.

Teaching children from an early age the morals and values that are needed to reach fitting adults, break the ring of the vicious circle and achieve the part that is attributable to the much-needed change. Denigrating any foreign stimuli in the "I" of our security ray.

As a consequence of the above, the social inclusion of these children is the next step. By training a disability learner you create a self-serving person. You create an equal opportunities society for every fellow. In many cases, people may have their professional rehabilitation, independence and self-realization and some such cases have reached our television receivers around the world. The right to dive everyone on the river called life either needs a life jacket or not.

During the last years in Greece, attendance of these children was compulsory, and it became part of the education ministry as a mainstream education competence. Since then, many needs have arisen for a smooth coexistence in an unknown and new area. In special education there is a wide range of people working to realize some dreams such as a walk in the park, a job in a public service, dealing with the purchase of the neighborhood.

Educators' task is to create collaborative personalized programs for each student that need support, to move safely in the school environment and in all its activities. Educators' existence is deemed necessary for a successful and happy cohabitation as they become the means of communication and support between the child and the others, with the ultimate goal of achieving the proper conduct of the program. A stumbling block to personality building.

1.13. Benefits of Inclusive Education

The findings of contemporary surveys on inclusive education indicate that from the adoption of the inclusion philosophy in a country's education system, undeniable benefits arise for both students with disabilities and for students of formal development (Power-deFur & Orelove, 1996; Anderson, Klassen & George, 2007; Westling & Fox, 2004).

As far as students with disabilities are concerned, their inclusion in the mainstream school setting helps the development of both their social and academic skills. Opportunities for interaction with their peers strengthen the social and communication skills of disabled students and improve their behavior. At the same time, it appears that students trained in inclusive school settings demonstrated better self-esteem and social adaptation than their peers attending special schools (Power-deFur & Orelove, 1996).

Nonetheless, the social standards provided by non-disabled students appear to have a positive impact on the cognitive sector as they increase their functionality, improve the working method and favor the widening of the general knowledge of disabled students (Anderson, Klassen & George, 2007; Panagiotou, Evangelinou, Dulceridou, Koidou & Mouratidou, 2009).

Inclusive education means that all students in an educational setting, regardless of their strengths or weaknesses in any area, become part of the local community. The primary reason for boosting the presence of students with special educational needs in typical schools is to boost their learning opportunities via interaction with peers and to encourage their participation in society's action. Finally, inclusive education offers benefits to the emotional field, by enhancing the feeling of belonging, being members of a group. Researches suggest that this feeling is a prerequisite for any kind of learning (Shaffner & Buswell, 2004). It is also important to mention that, according to parents, inclusive education limits family reliance, while children who are trained in an inclusive logic, they adopt age-appropriate behaviors more easily without special training (Power-deFur & Orelove, 1996).

On the other hand, the philosophy of inclusive education implies developing new, more creative teaching methods that respond to individual pupils' differences, which works for the benefit of all children and not just students with disabilities. Specific techniques such as experiential teaching methods, repetition, clarity and feedback provided for the education of students with disabilities also help students with low performance and difficulties in school (Power-deFur & Orelove, 1996).

In the same direction, adaptations to curricula and special training and support to the staff, raise the level of education provided for all students (Hines, 2001). At the same time, Educators in order to be able to respond to the increased demands of the "one *school for all*" are trained, learn to apply modern pedagogical tactics, develop their professional skills in turn and are able to manage the multipurpose classes that arise in the context of inclusion. In this sense, students who are not confronted with difficulties not only are not burdened by participating in inclusive classes, but they benefit as the level of teaching improves (UNESCO, 1994).

Non-disabled students, nonetheless, are definitely "winning" in their field and in social skills, as well. The idea of involving all students, regardless of their individual differences in typical class, familiarizes all students with physical, mental, behavioral, emotional, religious, racial, ethnic or other differences and teaches them to accept them as an integral part of school environment. Research data present that students trained in inclusive settings show greater understanding and respect for people, better manage individual differences in relationships and make friendships easier, while at the same time they develop strong self-esteem (McCarty, 2006; Power-deFur & Orelove, 1996). Finally, students studying in structures where inclusion practices are applied, are interested in the difficulties faced by their disability classmates and learn to provide assistance and support whenever necessary (Anderson et al., 2007).

Solidarity relationships that are created between children with inclusion of all students in mainstream school context, given that school is a mirror of tomorrow's society, can make a decisive contribution to the elimination of discrimination and to the creation of an inclusive society (Karagiannis, Stainback & Stainback, 1996). Beyond the reconstruction of education, the application of the principles of inclusion contributes to the elimination of prejudices and sets the foundations for a society of cooperation and understanding, with a climate of acceptance of diversity and social solidarity (Soulis, 2002). At the same time, it creates better conditions for removing or restricting exclusions and creates a perspective for the easier transition of children with disabilities into working environment and professional rehabilitation (Karagiannis et al., 1996)

The research by Garriott, Miller, Snyder (2003) in 131 special Educators showed that at least half of the them are in favor of inclusion - inclusion of students with light form of learning difficulties and disabilities with students without special educational needs at ordinary school. Still, it is believed that in mainstream school, children with special educational needs become more self-esteemed, while equal educational opportunities are offered as all students coexist without being marginalized.

Finally, inclusion may help to improve the relationship cost-effectiveness of the entire education system (UNESCO 1994). Concerning Greek community, it is likely that the establishment and operation of single school units for all students will cost less than a complex educational system, with multiple grades and types of school units, for different classes of students. The money spent anyway in the special treatment could be used to create inclusive structures equipped with materials and appropriate staff (Papapetrou, 2010).

In a research relating students with special educational needs in a special education setting to the ones in an inclusive setting, statistics reveal that those in the inclusive environment had greater academic progress (Brinker & Thorpe, 1984; Epps & Tindal, 1987; Peetsma et al., 2001). From the point of non-disabled view, the research mentions the advantages not only for children with special educational needs, but also for the non-disabled students. The majority of these advantages focus on social impact. The most important advantage concerns the inclusion experience in the range of awareness and tolerance. Students become more sensitive and supportive to the needs of others (Forrest & Maclay, 1997; Peltier, 1997).

Helping students with special educational needs, their peers develop characteristics such as willingness. Non-disable students felt that true affectionate friendships could be formed with their classmates dealing with special educational needs (Peltier, 1997). In case inclusive education was not applied, these kinds of relationships probably would not have been shaped.

Another benefit for non-disable children is the attendance of an extra help in the school classroom, and a feasible adaptation to different learning mode. Many times, even if there is a fully inclusive setting, a one-on-one assistant is essential. A highly- qualified assistant or special Educator offers a valuable resource for the non-disabled student (Hines, 2001). In an inclusive setting, several learning techniques should be applied so as to educate all kind of learners efficiently and effectively (Hines, 2001). Non-disable peers might benefit from several learning techniques being applied in an inclusive setting, as all learners, disabled or not, have their own style of learning.

Benefits of Inclusive Educator for Educator

Despite of the common outlook among Educators that they need special skills to teach students with special educational needs, survey suggests that the success of inclusive education relies on clear, accessible learning that motivates active participation of all students. The inclusive education motivated Educators to follow more child-centered approach which serve all students. Such learning approaches inspire Educators to apply new teaching methods, and to receive specific technological skills. By doing so, inclusive education might work as a catalyst in learning practice, improving the quality of pedagogy.

Benefits of Inclusive Education for Society

Regarding society, inclusive education offers a great benefit, as it emphasizes the social value of equality by obtaining a miniature model of the democratic process. Inclusion education could play a role to contend against discrimination. Discriminatory attitudes toward disable people continue to exist in community owning to the absence of awareness and information on living close with such individuals. It is not easy to break down the negative attitudes, but experience has shown that, within the right context, individuals are more helpful and occupy the skills of socialization and collaboration. It appears to be one fundamental way to uphold the civil rights of people with special educational needs.

1.14. Inclusive Education through Unofficial Learning Environments

One can take advantage of learning experiences and circumstances depending on his or her inclinations as well as his or her learning profile and interests. Consequently, the natural, spontaneous and non-regulatory way against which informal learning takes place allows their abolition restrictions and access to all people without exception, learning by participating in a process that includes all students (Green, 2003, 2008).

Therefore, the school director should encourage Educators to deal with informal learning, considering that informal learning is the most appropriate for the equal participation of students, the exemption from the stigma of their peculiarity and helps them to interact with people with a different learning profile contributing to the promotion of inclusive education.

An equally important practice is grouping co-operation where groups of children with different levels of ability are formed so that the more experienced help the others. Through group co-operation, teaching children collaborate, interact and create friendly relationships that help them to activate and strengthen their participation. In addition, through collaborative teaching, children discover the concepts more easily while they understand without much difficulty and thus reinforce accompanied by understanding learning, which encourages them to participate in all activities.

In the modern activities of informal learning the securing of interactivity is often sought to be particularly appropriate to achieve inclusion. Roussou (2008) emphasizes that the use of interactive, digital or verbal narratives, encourages the equal participation of apprentices. Thus, it should be designed modern interactive activities, so that students with special educational needs engage actively, without relying on passive intake of knowledge.

Building authentic communication with parents and students, encouraging parents to develop the student's imagination with cognitive and intellectual disabilities. This could be achieved by proposing activities to help children, co-operate with the class teacher to eliminate marginalization, co- teaching, participation in theatrical activities, participation in group games with quizzes and questions role playing or space perception activities.

Children with special educational needs are entitled in being taught through alternative education methods give them the opportunity to experience situations of everyday life through the use of theatrical play thereby facilitating their socialization.

1.15. The role of the Educator in Inclusive Education

One very important step by the Special Educator for promoting inclusive education is that he or she is not limited by including only those interested in the school, but involve parents and all the community in the learning process, as well. Cooperation should be encouraged thus; a supportive environment learning that leads to improved learner performance in reinforcement of self-confidence and progressively reduces exclusion in school.

In this way it gives learners a say in decision-making on learning and develops a climate of trust between students, parents and Educators. Furthermore, leaders who are able to create cultures inclusion in schools through cooperative efforts and respect interpersonal relationships with openness communicating with everyone is needed.

Educators play a key role in implementing inclusive program. The success of the program is of great responsibility of the Educators since they are the just the ones that mediate between the learners and the educational good. For this reason, an Educator should have the necessary knowledge to be able to use correctly the curricula and the training material required at a time. In addition, knowledge on a variety of subjects is necessary to be able to handle and tailor the teaching according to the needs and interests of the learners (Barton, 2004). Finally, proper targeting and timely planning, evaluation and co-operation between disciplines and institutions require the educational skills of organization, counseling and communication, as well as ongoing improvement and flexibility of the projects they implement (Saleh, 1998).

The school staff promote the assessment process by classifying students' strengths and the fields in which students are facing difficulties in mainstream classrooms. All at once, the school staff works as a team in order to induce the best combination of devices, setting- specific demands, and student features (de Anna, Gaspari, Mura, 2015).

Educators play an important role in both inclusion and development of students, as they are the ones who define objectives and teaching methods. In addition, they choose the means for the effective realization of the goals during the educational process. This is the reason why several surveys in Greece have dealt with their perceptions and views. Evaluative judgments, perceptions and opinions of Educators have a dominant position in the learning process (Papastergiou, 2017). Applying a personalized program can improve students' performance and help them stay in mainstream education context. However, it is important that the support that each student needs is given in a discreet, neutral and flexible manner and is applied on a case-by-case basis to the other classroom students and not just to students with disabilities (Watkins, 2003).

In order to promote inclusive education, a new type of Educator is required, the one that collaborates and supports student at the academic, social and emotional level (Watkins, 2003). Educators are called to shape the classroom environment in such a way that all learners feel acceptable, safe and welcome, promoting learning. It must be ensured that all students in each class feel members of the group and that no one is isolated for any reason. The formation of positive attitudes of all students towards diversity is also within the responsibility of Educators (Stainback & Stainback, 1996). Through discussions or actions in and out of classroom, Educators must conquer their students not to distinguish their classmates because of physical, mental, religious, national or other differences. The essential relationships between students are important for the success of inclusion of students with special educational needs (Doikou, 2000), and for strengthening children's self-esteem (Dellasoudas, 2005).

Pavone (2014) and de Anna, Gaspari, Mura (2015) stated that collaboration and communication among school staff, commitment and liability to learning process of all students, differentiation of training, and identifying "that social interaction is the vehicle through which learners' knowledge is unfolded" are the key role for successful inclusion of students with SEN (Special Educational Needs).

1.16. Obstacles to Inclusive Education

Teachers have been trying to promote inclusive education in recent years; however, they meet many difficulties. Below, main factors that preventing the development of inclusive education practices are mentioned: An obstacle it is encountered is the curriculum, which many learners cannot follow. Another obstacle is the specialized knowledge that many times does not have Educators to support all learners with proper way. Moreover, not all Educators are well qualified, while many of them feel uncertainty concerning the way to deal with mixed practices implementing in inclusive education. One more obstacle that holds back inclusive education at mainstream schools, is the attitude of schools' directors/headmasters. For example, occasionally directors/headmasters are negatively oriented with regard to expert teachers, and then the expert teachers feel dissatisfied affecting their effectiveness.

It is commonly accepted that the diversification of the educational needs of the student population is constantly increasing in school environments. It is therefore necessary for school unit directors to lead by ensuring that all students are involved in education. Collaborative culture, promotion of professional development, dedication ensuring equality, respect for diversity are just some of the strategies by which directors contribute to the creation of more inclusive schools (Kilgore et al., 2002). However, at times, the perceptions, knowledge, experiences, and school manager's goals are inhibiting the implementation of inclusive education. Therefore, it is imperative to choose the appropriate inclusive school leaders (Bell & Stevenson, 2006).

Inclusive education is an attempt to address obstacles that prevent the participation of students with special characteristics in education (Ainscow, Booth & Dyson, 2004). Such characteristics might be ethnicity, gender, socio-economic background, physical or mental disability. Nonetheless, inclusive education is also referring to the development of appropriate practices and policies, so that educational institutions can respond to students' diversity and equal treatment (Westwood, Graham 2003).

The concept of inclusion in education is quite complex, as it is a continuous process and not a final goal to be achieved within a certain period of time (Ainscow et al., 2004). It is a whole educational philosophy that calls on schools to provide high quality education to all students (Katzman, Jacobs, 2007). The concept of inclusion in education could also be seen as the question of the inclusive nature of special education (Slee, 2007). This is because the separation of pupils with special educational needs into special classes actually reinforces their stigmatization and marginalization.

A further obstacle of applying inclusive education is the fact that Educators have few tools and little experience in including children with different disabilities in typical classroom. This leads to negative attitudes and perceptions about this group of disability. An opinion that many times is expressed is that "inclusion" education is already here and it does not offer anything to students, nonetheless, it adds additional difficulties to Educators, while it deprives other students of the educational good. Because normally the teacher should give separate exercises and of course explain and check them if he or she really wants to include in his or her teaching and students who do not fully understand the educational material.

It is important to take care of the elimination of the causes of the differences in education, which are primarily class, social and cultural, and to take care - along with the political struggle for the elimination of social inequalities - for the functioning of supportive structures in basic education. It is essential to pay attention to the real problem and not waving the flag of supposedly "equality" until the brutal social reality comes to restore order, that is to say, the existing social inequalities!

However, inclusive practice is inconceivable, and it is becoming increasingly difficult to maintain for a variety of reasons: acute needs, resource poverty, and parents' inability to manage, participate and support their children's learning. There are conflicting agendas where values strongly supported in school are often being contravened; where Governments / Ministries of Education require measurements of success without counting the environment and social class; among students themselves who often witness contradictory behaviors at home, community and media.

It is required by the state, in particular, deep reform and comprehensive reorganization of educational institutions, the redefinition of teaching practices and methods, the active involvement of several actors and the break with existing social, economic and political practices (Peters, 2007; Mittler, 1995; Sebba & Ainscow, 1996).

Nonetheless, inclusive education does not focus only on students with disabilities. It concerns all students, regardless of their abilities, language, national or cultural identity, gender or other factors that may put them on the sidelines. In the context of an inclusive education model, schools are designed to address all students both having the same or different backgrounds, equal respect, and providing them with real opportunities for development and learning. In the philosophy of inclusion, when a student is experiencing difficulties in his or her learning path, then the problem should be sought in the learning strategies applied and more generally in the functioning of the school and not the student itself (Sharma, Loreman & Forlin, 2012).

It should be noted that not everyone in the international literature scientists do not include the idea of inclusive, in the same way. Speeches, discussions and articles highlight important differences in the views of different countries, governments, international organizations, and academics on the content of the term inclusion (Acedo, Ferrer & Pamies, 2009). Other definitions focus on the educational inclusion of students with disabilities in structures of a typical for all, while others much more "open", go beyond the limits of education. They talk about social inclusion, a process that is inextricably linked to the safeguarding of human rights, social awareness, social justice and non-discrimination, and aims to respond to the diversity of all and to ensure their equal participation in social life (Sosu, Mtika & Colucci-Gray, 2010).

It would be a mistake, despite the steps that are being taken constantly towards this direction, to assume that there is complete and universal acceptance of the implementation of educational inclusion. On the contrary, the debate about whether and how it can be implemented is strong enough. It is also noteworthy that the views - derived mainly from specialists - want the inclusion model to include the complete deconstruction, if not the abolition of special education for the sake of a typical school able to meet the needs of all learners (Ainscow & Miles, 2009).

With the emergence of the social model of disability, it is progressively being argued that the greatest obstacles in the inclusion of students with cognitive and intellectual disabilities arise inaccessible environments (Gal et al., 2010). Moreover, the attitude of Educators and learners, their level of access in technology, the level of expertise and instruction of educators concerning technology use and application; student perception, and the adaptation of curriculum, technology integration in the inclusive classrooms are some of the primary challenges and crucial factors in the productive use of assistive technology in inclusive education (Lang, 2001, Petty, 2012; Reed and Bowser, 2013).

Educators has the primary role to establish and maintain an absolute inclusive classroom that cannot be questioned (de Anna, Gaspari, Mura, 2015). However, this crucial mission depends on suitable, efficient and barrier-free educational techniques. From this point of view, ICT has proved to be a promising tool by offering means that support most students in order to overcome learning barriers. At the same time, students not only boost their school achievements, but their self-determination, enthusiasm and self-satisfaction. The research world of educational field, presents strong evidence on the aspect that "ICT is not only the mean and a forceful tool in upholding inclusive practice, but also offers a wide-ranging support for communication, supporting many students in learning process, along with those who deals with difficulties in learning. Moreover, ICT tools break down obstacles resulting in under-achievement and educational exclusion" (Becta, 2004, 2007; Della Volpe, 2016).

1.17. Inclusion Education and School Leadership

The role of school leaders in promoting inclusive education is very important as they can develop inclusive practices, create relationships between school and society, and transmit messages of respect for diversity (Riehl, 2000). However, it should be noted that the school leadership, which promotes inclusion, not only includes the actions of one person (the director/headmaster), but it is a collective process that supports the participation of teachers and the assumption of leadership roles from all members of the school community (Ryan et al., 2006).

School leaders have to create a school climate where parents have a feeling of contribution to decision-making and being welcome (Ovando & Abrego, 1996). In addition, a school becomes more inclusive for students with special educational needs when the director suggests Educators to behave with love to students. Love and acceptance enhance children's self-confidence and help them to have better learning outcomes (Noddings, 1992). Furthermore, a school leader can lead marginalized students to school success through the development of collaboration between school and society. This is because societies have resources that extend beyond the narrow school and family environment and can offer learners a variety of experiences (Hidalgo et al., 2004).

The formation of an inclusive school environment also depends on the relationship that develops between the director and the teaching staff. When a director applies the cooperative model of school leadership, where there is a distribution of tasks, initiatives and co-operation among Educators, it promotes inclusive education (Zembylas, 2010).

Finally, an interesting inclusive practice, which can be applied by school leadership, is co-teaching in mainstream education classes with parallel support. This practice helps students with special educational needs to join the typical classroom through interaction with their peers without being stigmatized (Kasidis, Apostolidou & Doufexis, 2015).

To sum up, school leadership centered on the concept of social justice is based on the ability to recognize inequalities in schools and take action to eliminate them. The school leader who serves inclusion does not act autocratic and authoritative, but gives all members of the school community the power to influence decision-making. The task of such a leader is quite difficult, as it is not only about effective management of the school but also about the use of his knowledge and experience to eliminate inequalities. The school leader who is committed to inclusion provides the appropriate resources, creates infrastructure and supports staff so that all students are welcome in a healthy school environment.

1.18. ICT for Students with Disabilities

Nowadays, a great range of ICT tools are used to reveal the cognitive potential of the learners, to offer them equal communication opportunities, adapt the curricula to accomplish their academic targets and straighten learners to partake in the learning procedures. More specifically, the ICT tools applied in the learning procedures are classified in several ways in the literature.

With regard to the growth of Information and Communication Technologies and their incorporation in all fields of social life including education, considerable demands lie on Educators and their students with reference to the learning methods with modern technology. The potentialities of using ICT as a tool enable the application of new learning methods, betterment and modernization of learning techniques, finding new potentialities and making the whole educational process more productive (Coleman 21, 2011).

To the greatest extent, a variety of ICT tools, along with communication means, books with pictures, eye gaze boards/frames, speech generating devices, text-based devices with speech synthesis and picture exchange communication systems, help individuals dealing with communication difficulties and speech disorders (PECS) (Annex-1) (Coleman, 2011; Reed, 2004; Reed, 2007, Reed, 2009; Reed and Bowser, 2013; McCullock, 2004; Day, Dell and Smith, 2011).

Moreover, modern technologies make it easier and enhance the communication among the students in the learning process (email, webpages, social network platforms, e-learning etc.). **E-learning** is another step forward in the area of self-education (Zounek 2009). In e-learning, ICT are used to formulate courses providing online access to electronic materials and education autonomous of the school building, self-study, communication with other stakeholders and management of the study.

Modern technologies play a fundamental role in the education of students with special educational needs in general. Software designed specifically for students with disabilities is a very profitable learning tool while, software for all type of disabilities usually focuses on the individual senses – aural and visual perception, orientation in space, reinforcing attention and development of memory as well as helps with education in case of problems with specific skills such as arithmetic, writing, acquisition of grammatical rules reading etc. (Zikl, 2011).

Technology offer support in learners with disabilities rewarding challenges in learning process, particularly in fields of writing, suggesting use of computer-supported tools. Moreover, technology can also ease frustration, boost motivation, advance a feeling of peer acceptance, and promote productivity not only in the classroom but at home, as well. Both the effort to find a supportive tool promoting reading skill and the development and greater accessibility of ICT has as a result to the more frequent use of e-book readers and tablets. These devices give to students the ability to make adaptation on font size, background, brightness, line spacing or typeface, which facilitates them.

The use of special software/applications or audio-visual technologies in learning process is attractive and usually enjoyable. The great variety on the accessible technologies allows interactive engagement with the learning process by using various senses that makes easier comprehension while boosting memory skill. Modern technologies and software/application are useful complements of traditional teaching tools, their function is to create motivations for the students, teach them to correct their own mistakes and be more autonomous.

The results of the surveys resolved for the current research indicate that Assistive Technologies and tools are used for boosting individuals with disabilities in many fields of learning process, like reading, writing, communication, etc. Moreover, the surveys in the literature present that using assistive technologies and tools in learning process has positive effects. As proved by literature review conducted, the nature of the studies (software, characteristics of the devices, etc.) have been modified/advanced over time, with several Assistive Technologies and tools being suggested for various disability groups (Chambers, 1997; Reed, 2004; Reed, 2007; Manning, 2008, Reed, 2009; Day, Dell and Smith, 2011, Jansson, 2008b).

Leaners with unique features and needs should be provided equal learning opportunities in their academic life. Offering access to suitable Assistive Technologies and tools, while at the same time, boosting their academic success are among the principal factors in generating equal learning opportunities for individuals with disabilities. ICT tools that help in improving the students' quality of life in a way suitable to their personal differences and needs can be used to serve students with disabilities in numerous areas of education.

Inclusive education is about all learners attend and are welcomed by their peers in schools in age-proper, regular classes and are being offered support in learning process, contributing and participating in all fields of school life. Inclusive education concerns the way of how people establish and design schools, classrooms, curriculum and activities in order that all learners are being taught together and participate in every activity. Thus, ICT tools is believed to be a key tool for enhancing equity in educational opportunities.

1.19. Assistive Technologies

It is globally accepted that technology give the opportunity to Educators to provide content and material to their students using various media, webpages, e-mail etc. and to naturally adjust them to the different needs of students as it is easy to update and store them or add references for further materials in any form.

The set of technologies used to support typical tasks of people called Assistive Technologies (AT). The term Assistive Technologies indicate the equipment, devices and/or apparatus, and the procedures, systems and adaptations accomplished to the setting in order to offer support and ease functions, used by individuals with disabilities. Lancioni et al. (2013) suggest that Assistive Technologies are numerous devices whose purpose is to

Figure 5 : *Assistive Technology Retrieved from: https://assistedtechnology.weebly.com/social-training-and-at-hannah-edgette.html.*

support the disable and students with learning difficulties to better function in everyday life and accomplish a greater quality of life.

These technologies are designed to enable individuals with disabilities to perform these tasks with ease. Assistive Technologies are divided into high-and low technological level (high / low-tech). The first category includes electronics and software, for instance, specialty keyboards for users with mobility problems. In the second category, mechanical and electrical devices are mainly included, such as wheelchairs, pens with special handles, embossed paper with lines etc. When used with computers, Assistive Technologies sometimes referred to as Adaptive Software or Hardware (AS or AH) respectively.

Researchers reported that the use of Assistive Technologies helps learners to enhance their needed skills for communication. Rodríguez et al. (2008) suggested that communication technologies should be offered to every individual dealing with speech difficulties and the ability to communicate with their peers.

Coleman et al. (2015) found that using PowerPoint presentations to instruct vocabulary appear to have a constitutive effect on boosting the vocabulary of third-grade hearing impaired learners in secondary school. Moreover, Ferreira et al. (2013) studied the positive impact that Assistive Technology of computer games had on kids with Cerebral Palsy who were incapable of speaking. The outcome of the survey showed that kids used the communication means of sound or facial expressions, proposing that Assistive Technologies are essential for social interaction.

McCulloch (2004), for instance, classified Assistive Technologies into low technologies, like magnifiers and pencil holding devices, and high technologies, like computers. Several researchers (Day, Dell and Smith, 2011; Gierach, 2009; Reed, 2007; Colleman, 2011) classified Assistive Technologies reliant on the reading, writing, visual, hearing, and communication skills and capability that learners are expected to receive during the learning procedures. McKnight and Davies (2013), differently, suggested that Assistive Technologies should be categorized based on the concepts of:

- learners' needs, capability and purposes;
- technologies and ability, and

- content (such as educational content).

ICT is a proper tool of personalization and satisfaction of the need to adapt the learning process and methods to the needs of each student, who are physically, mentally or socially disadvantaged besides the rest of the population, i.e. the students with cognitive and intellectual disabilities or students dealing with vision disabilities. Adaptations for students with disabilities, have been globally used to balance the obstacles associated with difficulties in reading, writing, mathematical reasoning, as well as problem solving (Rotatori and al, 2014).

Expanded use of technology during cooperative teaching process strengthen the participation of students with disabilities by infracting particular disability obstacles. For instance, a child with spelling problems could use devices in order to verify spelling or look for definitions during a cooperative writing project. Another example, a child with problems on writing might use a portable note taker to reduce his or her disappointment, enhance his or her motivation to complete assignments, and make him or her feel more welcome by his/her peers in the mainstream education setting. Hence technology contributes to boost academic progress.

Cumley (2009) reports the use of tools and methods that cover the needs of every learner dealing with physical disability to ameliorate their reading skills and suggests for a successful learning the below tools and methods:

- Standard texts;
- Accessible Books;
- Low-Tech Modifications to text;
- Handheld devices to read each words;
- Use of pictures/symbols with texts;
- Electronic Texts;
- Modified Electronic Texts;
- Text readers;
- Scanner with OCR and text reader, and
- Text Reader with Study Skill help every child dealing with physical disability.

Jansson (2008) states that Assistive Technologies like audio texts or Braille should be adapted by users with visual problems in order to facilitate reading process and enhance their reading skills, in general.

Several aids, including word processors, tools and means that ease skills such as hold of pens, and computer software and applications, are available to amplify the writing skills of students (Adebisi, Limsan and Longpoe, 2015; Coleman, 2011; Reed, 2004; Reed, 2007; Manning, 2008; Reed, 2009; McCulloch, 2004; Day, Dell and Smith, 2011). Studies may have different results regarding the effect of Assistive Technologies for writing skills depending on the kind of Assistive Technology used. For example, according to Peterson-Karlan (2007), different types of computer software such as voice recognition, word estimation and text-to-speech, facilitate successful outcomes for students with writing difficulties. Belson, Hartman and Sherman (2013) found that the use of digital pens by persons with learning difficulties positively affected the quality of note taking, while McCartney Prest, Mirenda and Mercier (2010) indicated in their study on the use of symbol-supported computer software in teaching writing to persons with Down Syndrome that using computer software improved their writing speed and quality.

There is a great variety of online gateways giving the opportunity to Educators for further education, inspiration. Moreover, there is a vast amount of quality learning materials accessibly for free. The Interactive Whiteboard (IWB) enables quick adjustments of the content and graphics of the material (change of font, font size, line spacing, background color, font color, etc) based on the needs of each student with disabilities. For example, it is feasible to assign task to a group of students, requiring to take a test using the poll accessory enabling to answer questions that is presented on the board. That fact offers at once feedback and work with mistakes before them become fossilized, including all the students at the same time. One more asset of ICT tools is that they are not only easy to introduce but also easily made accessible to the whole class that makes it feasible to actively work with them or use them for homework practice. Furthermore, they work as a clear blueprint of schoolwork for students with disabilities.

Other studies confirm that ICT tools, course materials printed in Braille, magnifiers and screen reader software should be used as Assistive Technologies to enhance the reading skills of learners (Adebisi, Limsan and Longpoe, 2015; Coleman, 2011; Reed, Cumley and Walser, 2004; Reed, 2007; Reed, 2009; Manning, 2008; Mahajan, 2014; Reed and Bowser, 2013; McCulloch, 2004; Day, Dell and Smith, 2011).

Adaptive strategies are techniques that people with disabilities use to help them interact with their computers or other devices. For instance, someone who is not able to see a website can bounce (tabbing) through links on a page as a strategy to be able to scroll through the text.

The devices should be easily understandable by users with limited exposure to technology, portable (easy to move from one place to another), and easy to operate without prolonged training or complex skills. Depending upon the differential abilities of the learners, and the context and feasibility of the approach, assistive provisions in education can support students with disabilities in learning. Moreover, a collaborative effort in the use of assistive devices, resource room support and innovative educational strategies to promote and sustain inclusion can support these students to learn at par with their non-disabled peers in inclusive educational settings (Ahmad, 2014).

Below is a comprehensive list of Assistive Technologies and adaptive strategies (Brewer, 2005):

Alternative keyboards: Some alternative keyboards were created to give users the opportunity to customize the order in which they facilitate the keys. Some special keyboards are commercially available for the visually impaired in one or more of the following characteristics:

i. larger keys;
ii. colored keys, and
iii. keys with tactile Braille characters display.

Monitors Braille: Braille Monitor is an optical reading device, which can be connected to any computer machine and allows visual access to the texts in Braille in real time (without production of documents or books Braille). It can be used either by 6 or 8 pins of coil (solenoid) and more often provides navigation keys. It may be stable, and portable. However, the noteworthy is its high cost.

Scanners**:** Scanner printed material can read and pass on to the screen of any computer machine in image form whatever is in print form (text fro7m books, newspapers, magazines and even images, shapes). It is frequently used in conjunction with optical character recognition software.

Screen magnifiers: Software with function of a magnifying lens. By using this software on the computer screen all items of interest to the user are zoomed. Screen magnifiers for those dealing with limited visual ability enable them to enlarge the text, an image or a small object on a screen or to print texts with larger characters. Screen magnifiers also cover the needs of people with color malfunctions. They include the following types of systems:

i. a) screen magnification software computer;
ii. b) magnifiers video (or CCTV) which can operate independently or in combination with PC, and
iii. c) small portable magnification.

Screen Readers: Screen reader finds all text formats (visible or hidden) in the graphical user interface (pictures, buttons, menu, dialogs, lists, message boxes) of a computer and sends it to the system of convention the Text to Speech. Moreover, some screen readers can be used in combination with Braille screens. The user perceives audio and / or visual the handwritings and picturesque surroundings of the GUI. In addition to this, the user can receive acoustic verification of the characters typed. Nowadays, Screen Readers are available for handheld computers (PDAs) and mobile phones. Screen reader might have the ability to support several languages, to support typical applications of MS-Windows, as well as popular office applications.

Speech recognizers: The speech recognition system allows entering text by speaking instead of typing on computers and mobile devices (e.g. mobile phones). Those are distinguished in dictation systems, command, and control systems.

Tabbing through components: The tab through components is an adaptive strategy for users who cannot use a mouse. This technique serves to quickly access through all the elements of the whole software application. The users who use screen readers, such as the blind or dyslexic users are likely to use this technique in combination.

Text-to-speech converter: The system of converting text to Text-to-Speech Synthesis, is a software application that delivers any text in real time (without pre-recording). It is important to properly support the requested language. Currently it is available the Text-to-Speech Synthesis software even in mobile phones. It is worth noting that the progress of these systems since the generated speech is quite realistic.

Visual alarm: The visual alarm is an alternative for deaf users or users with hearing difficulties so as to receive visual notification of a warning or error message that in other cases it would be made with a typical sound.

Some Assistive Technologies are used in conjunction for the best possible results. Some accessibility solutions were created within the operating system. Take for example the ability to change the font size of the system, or to configure the operating system so that multiple keystroke commands (multiple-keystroke commands) can be introduced through a series of single individual keystrokes.

In a research of Earman-Stetter and Tajero-Hughes (2011), it was introduced that everyday computer-aided reading use had a positive effect in reading comprehension skills of the learners dealing with learning problems. Meyer and Bouk (2014) suggested that the learners felt they read in a faster way and more fluently when using text-to-speech software. Armstrong and Hughes (2012) noticed that reading comprehension scores of three out of five students enhanced as a result of the story book-reading practices supported by computer software suitable for reading skills of autistic learners. Beyond, Gonzalez (2014) stated in his study concerning 17 learners with reading difficulties that they accomplished in re-telling stories after undergoing e-book reading

practices. The pre- and post-practice scores of these learners on the multiple-choice reading comprehension questions seem to be no different.

1.20. ICT and Inclusive Education

Various researches have indicated with particular concern the topic concerning Special Education. Among them, the studies conducted by Carneiro, Dall'Acqua and Caramori (2015), and Passerino and Santarosa (2008), which review learning practices in inclusive classrooms and multi-functional resources in classrooms.

Regarding the use of ICT tools Msila (2015) tried to researched the Educators' aspects and noticed that even though many Educators have disposition and good will towards innovations in learning process, the Information and Communication Technologies-ICTs might uncover their limitations in learning process. The findings present that the success of digital technology in the classroom depends on the adequacy of the Educator and on his/her positive stance in using ICTs.

An asset of ICT use in teaching students with disabilities is the personalization. Educators are provided with the ability to involve all students in the learning process at the same time even though their differing needs. The students are able to work independently on materials prepared in advance or in an electronic setting. One more advantage regarding the possibility of compensation in the case of common activities since the software and several devices allow the students to block out the negative effects of their obstacles (for instance, write essays on a computer, read a book using tablet, that enables graphic adaptations of the text, listen to instructions rather reading them etc.).

In fact, the heart of the issue concerning inclusive education lies in the fact that many education stakeholders (teachers, managers, coordinators) forget that it is not the student who is oblige to adapt to the school setting, but the institution receiving the student with the disability is oblige to go through many modifications and adaptations. Among those modifications and adaptations is the formation of Educators, their capability to deal with ICT tools and their pedagogical approach to engage students in multiple literacies.

The admission of a student with disabilities in a regular school context is a right guaranteed by law. The school substitutionally should offer the adequate integration of the child to life in society. Nonetheless, in Brazil, it has been observed that several educational institutions take actions that do not solve the challenge of inclusion (Moreira & Manrique, 2014)

Other researchers established applications to support children dealing with communication problems with their learning inside and outside the classroom (El-Seoud, Samir, Karkar, Ja'Am, & Karam, 2014; Silva, Prado, Scardovelli, Bochi, Campos, & Frère, 2014; Scardovelli & Frere, 2015). One application concerns the production of educational content using the android and iphone technology and built-in speaker and camera characteristics (Vullamparthi, Nelaturu, Mallaya, & Chandrasekhar, 2013; Castro, Bissaco, Panccioni, Rodrigues, & Domingues, 2014).

In the learning process, Assistive Technologies suggest several solutions in offering learners support that covers every need (McKnight and Davies, 2013). Using Assistive Technologies enhance the achievements of the learners by offering support, like adapting content and activities of the curricula, distinct to students' needs within a least possible restricted setting, (Wojcik and Douglas, 2012; Parette and Peterson-Karlan, 2007; Parette, Stoner and Watts, 2009). In sum, Assistive Technologies provide enhancement not only the practical performances, but the educational success of students, as well (Edyburn, 2005; Edyburn, 2006; Alnahdi, 2014).

In the time of learning process, the needs of individuals receiving special education reveal divergence. ICT means like voice recognition applications, mobile devices, symbol-based interaction and virtual reality help individuals with various learning needs all their academic life (McKnight and Davies, 2013).

***Figure 6** : Inclusive Education Retrieved from: https://autismandbehaviorresources.com/blog/bring-awareness-to-disabilities/*

Douglas, Wojcik and Thompson (2012) found that Apple's smart phones, computers and devices, in general offers 280 applications that targets to facilitate learners with disabilities in their everyday lives and proposed that the effect of these applications on learning should be studied.

Although a lot has been done worldwide to increase participation in education, the discourse on ICT for inclusive learning is still based upon the number of devices provided in the public education systems, instead of how they contribute to innovative learning. A study by Madden (2013) found that inclusive teaching practices allow students to learn in varied ways and at different rates. Equally, mobile technologies offer personalized learning models that can be inclusive to the excluded rural learners. However, Madden suggests that a paradigm shift is required to integrate mobile devices effectively into new learning environments that promote a student-centered approach, collaborative learning and constructivist pedagogy (Madden et al., 2013).

Rojo (2013: p. 8), points out "if contemporary texts have changed, competences or reading skills and production of texts required to participate in current literacy practices cannot be the same". Nonetheless, in the case of the school setting, these notions usually are miscomprehended, by rights. People rarely comprehend the difference between reading acquisition and literacy, and now there is the notion of multiliteracy, i.e., the skill of the student to read and write texts in various media, along with digital media.

Based on researches variant technologies, like abacus, extended worksheets, and audio calculator, enable learners to boost their mathematics skills (Adebisi, Limsan and Longpoe, 2015; Akpan and Beard, 2014; Coleman, 2011; Reed, Cumley and Walser, 2004; Reed, 2007; Manning, 2008; Reed, 2009; McCulloch, 2004; Day, Dell and Smith, 2011). Results regarding boosting skills on math of learners with disabilities appear that Assistive Technologies positively affect these learners' success in math field.

Figure 7 : *ICT Retrieved from: https://technology-allitem15.blogspot.com/2019/10/information-communication-technology_10.html*

For instance, Bouck et al. (2015) pointed out that using calculators in math lessons positively affected the success of students with disabilities (Bouck et al. ,2013) on instructing mathematics via digital audio books and computer software/application (ReedHear software: audio text, volume determination, digital magnification, etc). Moreover, it was found that learners with low vision boosted their math skills, and they comprehended better math text by using technologies.

Isaila (2014) studied the effect of assistive software/application for students with visual disability in comparison with cognitive and intellectual disability, highlighting that assistive technological tools are essential tools and computer-aided teaching is a favorable strategy in teaching. Screen reader program, a kind of assistive technological software, offers learners with visual disability in comparison with cognitive and intellectual disabilities access to the information in written texts on computers (Isaila, 2014). Isaila (2014) found that 87.8% of the learners who used assistive software/application in a special education setting stated an efficient, attractive and interactive learning whereas 12% of them indicated the use of assistive software as monotonous.

As long as various inclusive approaches might be applied in rural areas to amplify ICT-use in learning process, it is essential to conceive existing obstacles. For example, technological gaps contain uneven access to interactive digital devices like smartphones owning to the great cost of handsets and broadband connectivity. Another example is the inadequate ICT literacy skills among Educators and learners or language usage on the Internet that is to a great extent English that many rural individuals are not capable of understanding. Similarly, in some societies, cultural obstacles prohibit women to access public spaces for Internet access and holding mobile phones.

All in all, technological tools and accessible special equipment, like suitable size chairs and tables, variant chairs, walking devices, electric wheelchairs, or sticks, direction finding devices etc support learners to succeed (Reed, 2004; Reed, 2007; Manning, 2008; Reed, 2009; Day, Dell and Smith, 2011; Jansson, 2008b).

Moreover, in general, various Assistive Technologies, like toys, computer games, or sports equipment, based to the needs of learners with disabilities, facilitate learners in using of their leisure time or taking part in social activities (Reed, 2004; Reed, 2007; Reed, 2009; Day, Dell and Smith, 2011).

1.21. Teaching Methods

Learners with disabilities might deal with problems in their everyday life functions, like cooking, eating, getting dressed or going for shopping. Technological tools like adapted games or sports equipment facilitate individuals with disabilities (Bryant, Seok and Ok, 2012; Reed, 2007; Gierrach and Stindt, 2009; Day, Dell and Smith, 2011).

In another research, Stephenson (2015) suggested that using tablet and computers had a positive effect in learning process for children with disabilities. Offering access to computers and tablets to children with disabilities result in supporting skills of these children like communication and writing. For instance, writing skills of children who are not able to use pencils and papers due to physical impairment might be supported via computers. Likewise, in a research taken place in Switzerland regarding the use of tablets in special education schools, Karlsudd (2014) proposed that tablets support children in being more active in the learning process, that they offered substitutional communication options via audio or pictures, while they should be offered with more economic resources for their learning.

In the classroom, the Educator and the student create a teaching-learning relationship. In order this relationship to succeed, it is essential that the school setting to be supportive to students with disabilities (Beavis, Muspratt, & Thompson, 2015; Vogel & Amate, 2014; Meer, Didden, Sutherland, O'Reilly, & Sigafoos, 2012). Every student should receive an individual treatment with resources that make easier his/her communication with peers and Educators (Mello & Scanzerla, 2013).

The intention of the new progressive learning method called *interactive teaching* is to provide to individuals a more amusing and less monotonous form of education, increasing their attention and motivation to learn. An equally important goal is the effort to involve the pupils themselves in the education process, enabling them to actively participate in it and shape it instead of being mere passive listeners (Interaktivní výuka, 2014).

Educators can help to make classrooms more inclusive by using active, child-centered teaching methods. These methods can:

- encourage all students to play, learn together, and share responsibilities;
- reduce the impact of learning difficulties;
- prevent the development of difficulties in learning;
- identify those students who are frequently labelled as "slow learners", but who in fact have a disability;
- address difficulties with behavior;
- incorporate the skills needed for everyday life into the curriculum;
- make learning fun;
- relate what is learnt at school to daily life and home situations;
- vary the method and pace of teaching in order to maintain students' interest and enable them to learn at their own speed;
- improve the quality of relationships in the classroom;
- help educators to improve their teaching skills.

Wojcik and Douglas (2012) pointed out that the most influential factor in the learning process is the efficient use of the assistive technologies in helping children to enhance their skills, like reading, communication and movement. Moreover, they mentioned that academic success of children should be boosted by taking into account the fact that Assistive Technology is not oriented to one particular group of disability or one particular skill. They propose first use the low-cost and easy-to-use low technologies, and then continue with considering the high technologies when making a decision on the Assistive Technologies to be used in the learning process.

Special educational needs of the students suggest variance in the learning process. Professionals and researchers studying the range of special education should comprehend the needs and aptness of the children in order to offer them with the most suitable help. (McKnight and Davies, 2013). In this instance, models have been established to help children with disabilities get the most from a suitable assistive technology/ tool in learning process.

Offering the opportunity to personally assess children make easier the integration of them into the learning life in line with their needs. Furthermore, assistive technology assessment tools have common targets at the screening, implementation, follow-up and referral stages (Lahm and Mendonca, 2008).

Enhancing knowledge and experience of the professionals in this area will result in developing equal learning opportunities for children with disabilities. Establishing suitable assessment tools for Assistive Technologies will make easier the access to AT and inclusion in social life and learning of children with disabilities. Educators might have difficulty in offering equipment, completing the suitable learning materials, and using various teaching methods based on the learning needs of each child (Williams, 2005; Bell, Cihak and Judge, 2010; Petçu, Yell and Fletcher, 2014).

1.22. Web Accessibility

Web accessibility is referring to the guidelines explain how to make web content accessible to people with disabilities. These guidelines are intended for all web content developers (page writers and web designers) and for developing authoring tools. The primary goal of these guidelines is to promote accessibility. However, compliance with them will make the content of the web available to all users, regardless of any user agents (e.g. desktop browser), voice browser, mobile phone, or restrictions that may operate (e.g. noisy environment, or downstairs rooms, in a hands-free environment, etc.). Adherence to these guidelines will also help people with disabilities find information on the web faster. These guidelines do not discourage content developers from using images, videos, etc., but instead explain how to make multimedia content more accessible to a wider audience.

1.23. W3C

The W3C[18] is a consortium of organizations, companies and generally interested on web technologies. The WAI[19] (Web Accessibility Initiative) is one initiative within the W3C dealing with web accessibility issues. For this reason, this section of the W3C issue periodic reports and instructions that related to the web accessibility topic.

1.24. The Components of Web Accessibility

Web accessibility is a situation that involves every feature of a website. The different components of the website should be interconnected and interdependent to each other in order to generate a website that is utility and accessible for the benefit of people with special educational needs. These components concerns:

User agents. User agents are the web browsers, mobile phone browsers, media players, plug-ins, Assistive Technology, and other software that acts in the name of a user.

Content. Content comprises the information on a webpage or web applications, like text, images, and sounds; or the code, script, or markup that designate the structure, presentation, etc. of the website.

Authoring tools: Authoring tools concern software that develops websites like code editors, content management systems, blogs, etc.

Evaluation tools: Those tools address reviews concenrning effectiveness of accessibility features and support tracking of remediation efforts.

For a disabled person to access the web, needs to be able to use some reading tools to read the content produced by a writing tool (maybe for the disabled) Thus, there are three basic categories of instructions.

- ATAG (Authoring Tools Accessibility Guidelines);
- UAAG (User Agent Accessibility Guidelines);
- WCAG (Web Content Accessibility Guidelines.

[18] http://www.w3.org
[19] http://www.w3.org/WAI/

In the case of applications and e-learning, tools is the content. That is, a disabled person can navigate the tool (which consists of web content- that is websites). There is a big variety of reading tools that a disabled person can choose base on what suits him/her best. As far as the writing tools are concerned, they are needed in case someone with a disability wants to produce content for the web (i.e. websites). For this reason, below there is a reference with instructions to ATAG[20] and UAAG[21].

1.25. ATAG

The first edition of ATAG consisted of a series of instructions while the current 2nd edition divides the instructions into two main axes and subcategories.

Axis 1: The authoring tool interface is accessible.

- The interface follows instructions so that it can be used by people with disabilities.
- The editing interfaces are perceptible and must be functional.
- The editing interfaces need to be easy to understand.

Axis 2: Support the production of accessible content.

- Fully automated processes for accessible production content are offered.
- Support authors for the production of accessible content.
- Support authors to improve the accessibility of an existing one content.
- Writing tools need to promote and incorporate features of accessibility.

[20] https://www.w3.org/WAI/standards-guidelines/atag
[21] https://www.w3.org/WAI/standards-guidelines/uaag

1.26. UAAG

The 1st edition of UAAG consisted of a series instruction while the 2nd edition of UAAG which is under development divides the instructions into five basic principles that a navigation tool should meet.

- Principle 1: Perceived;
- Principle 2: Functional;
- Principle 3: Easy to understand;
- Principle 4: Provide program access;
- Principle 5: Follow prescriptions and contracts.

1.27. WCAG

As in UAAG and ATAG the 1st version of WCAG[22] (Web Content Accessibility Guidelines) consisted of a series of instructions in order to make web content accessible. The guidelines provide technical recommendations on how to make website content accessible to people with disabilities. Moreover, the guidelines are the standard reference for most website accessibility-related legislation like the Americans with Disability Act (ADA) in the US, and the European Web Accessibility Directive.

Even though the WCAG is not enforceable, the guidelines constitute the foundation of necessary accessibility regulations around the world. For example, Section 508[23], AODA, CVAA, and the Australian DDA are based on WCAG 2.0 Level A and AA features of success. Moreover, the EU Web Accessibility Directive[24] now demand compliance with WCAG 2.1 Level A and AA.

The WCAG was addressed as a guideline for:

- Web content developers (page authors, site designers, etc.);
- Web authoring tool developers, and
- Web accessibility evaluation tool developers.

[22] https://www.w3.org/WAI/standards-guidelines/wcag/
[23] https://www.section508.gov/
[24] https://digital-strategy.ec.europa.eu/en/policies/web-accessibility

Nonetheles, as the need for website accessibility is growing and growing, obviously anyone who has an online presence must comply with it as a standard for web accessibility. This contains policymakers, managers, researchers, educators, marketers, and communicators. Furthermore, most international legislation references WCAG 2.0 level AA as the minimum web accessibility compliance, thus many countries all over the world have made it a requirement for anyone who holds a website to follow these guidelines.

In the 2nd of WCAG version many of the instructions together with the new ones have been categorized into four basic principles of web content. The lack of any one of these four principles will make the website inaccessible to individuals with disabilities.

- Perceived
- Operable
- Easily understood
- Innovative - Robust

Perceivable

This principle ensures that the content and interaction elements of a page (buttons, data input elements, control elements e.t.c.) must be possible perceived by users in the appropriate way. The general instructions are:

Alternative texts: Provide alternative texts where this is necessary, as in pictures, diagrams, symbols etc.

Timed media: For timed media to be provided alternative media such as video subtitles, audio descriptions, etc.

Customizable Content: Content is customizable for different presentations (e.g. simplified design) without losing its structure or information.

Distinctive Content: Provide ways to distinguish content such as clear sound, suitable background color contrast and letters etc.

Operable

This principle ensures that both the data interaction as well as content navigation will operate normally. The general instructions are:

Accessible with keyboard: All provided functions should be enabled via keyboard.

Adequate time: Provide sufficient time to the users in order to read and use the content.

Epileptic seizures: Do not design content in a way which can cause an epileptic seizure.

Navigable Content: Provide ways for the user to navigate in order to find content and understand where this content is.

Easily understood

The authority shall ensure that the information and interaction elements will be easily understood. The general instructions are:

Readable: The text should be readable and easy to understand.

Predictable: Pages are displayed and operate in a predictable way.

Login Help: Support users to avoid and correct any login errors data.

Innovative - Robust

This principle ensures that the content should robust enough to be used reliable from a wide variety of navigation tools including any AT (Assistive Technology). The only instruction here is **Compatibility**: The compatibility with current and future tools navigation including AT.

1.27.1. Accessibility Levels

WCAGs are accompanied by rich material with even greater analysis of how and why each instruction should be followed. Moreover, WCAGs are accompanied by compliance requirements for instructions showing three levels of compliance.

Level A: For level A, the content must meet minimum possible compliance criteria or to provide an alternative A-level compatible version of the page. More specifically, Level A is refering to the most essential requirements of accessibility characteristics and is the least possible degree of accessibility that must be met. Failure to adjust to this level will end up in a tottaly inaccessible website.

Examples of Level A success criteria:

- All non-text content such as audio or video must have an alternative text, such as alt text or captions, that provides the equivalent objectives.
- Visitors of the website are able to navigate efficiently using only the keyboard.
- If there is audio that auto-plays on a website for more than three seconds, make sure that volume adjustments, stopping, or pausing it are feasible.
- Offer an alternative (e.g. an audio track) for time-based media or video content.

Level AA: For level AA, the website must meet the criteria of level A and provide one AA level compatible alternative version of the webpage. In particular, Level AA introduces the main obstacles to entry for the disable. This is the highest level of conformance needed by most websites as it makes sure that the biggest accessibility obstacles are eliminated.

Examples of Level AA success criteria:

- Descriptive headings and labels in content are offered.
- Navigational elements on the website, such as menus, should be in a regular, repeated arragment across the website.
- When executing an action on a website, such as filling forms or clicking on buttons, errors migh occur on visitors' part. In case an error should occur, suggestions for correction should be offered, as well.

AAA Level: For the AAA level, the website should meet all the criteria of levels A, AA and AAA, or provide a AAA level compatible alternative. For Level AAA, the highest level for accessibility under WCAG and it is more difficult to accomplish by most websites. Accomplishing this level is preferable but not of the fundamental.

Examples of Level AAA success criteria:

- The visual presentation of text, and images of text, must have a contrast ratio of at least 7:1.
- Eliminate timng limitations from all content, except for it is for non-interactive synchronized media and real-time events.
- When a visitor needs to submit information on a webpage, the submissions must be reversible, checked for input errors (and provide suggestions for correction if errors do occur). A confirmation mechanism is in place to permit visitor to review the submission and edit if needed.
- Images containing text must be avoided or only used for decoration.

1.28. Declaration of Agreement

A page that follows the instructions, is not necessary to state somewhere that it is in accordance with instructions. However, if the website does so, it must declare the following items.

- Date of inspection;
- Instructions that follows;
- Level of compliance;
- An accurate description of the pages that they are comply with the instructions;
- A list of web technologies that uses.

1.29. Section 508

In addition to W3C, several others organizations and governments have versions related to accessibility instructions. One of the most well-known is Section 508[25] of the US Government. It is part of the Rehabilitation Act reformed in 1998. Section 508 provides a range of standards for general digital content and equipment (applications, web

[25] https://www.section508.gov/

content, video, computers, etc.) in terms of accessibility. Regarding the content of the web, the instructions look like the WCAG instructions in several respects as the target is access to content independently of software or AT that a web visitor might use. They are divided into sixteen rules[26].

1.30. Section 504

Another section under the Rehabilitation Act of 1973 that is referring to accessibility for the disable is **Section 504**. Section 504 reccomend agencies to offer disabled individuals equal access in order to join programs and use services. The law applies to organizations that deals with federal funding like higher education institutions, non-profits, schools, hospitals, mental health centers etc. Even though Section 504 does not particularly relate to web accessibility, it does indicate that agencies must offer auxiliary aids, like braille, content with enlarged print, video captions, etc. so as information are accessible for people with disabilities.

In 2018 refresh of Section 508, all electronic content, like web content, software, etc., must comply with WCAG 2.0 level A and AA (Retrieved on 2/2021 from: https://monsido.com/platform/web-accessibility/section-508).

1.31. Accessibility of Documents

Below, guidelines are mentioned concerning documents accessibility.

Headings

It is important to use styles and highlights to format headings in a document. The headings shall be short and concise as well as in the correct order. A table of contents is something that can be created very easily while makes the document easier to read. Screen readers can easily provide navigation to the contents of the document and consequently to the whole document recognizing the headings.

[26] https://www.section508.gov/manage/laws-and-policies

Paragraphs

Another element that makes a document more accessible to disabled people is paragraphs. Likewise in Headings, paragraphs shall be styled correctly, as well. Blank lines between paragraphs or chapters should be avoided or not replaced by line spaces (the Blind users listening to blank lines might think that the text is over!). It is important to use the style to change the distance paragraphs and headings. Consistency in the visual presentation of the document helps in making reading easier. Finally, misunderstandings like "end of document" should be avoided because screen readers confuse users.

Alternative text

Alternative text should be inserted into images and tables while they need to be accurate and offer representative information. Moreover, the alternative text need to be comprehensive and without expressions like "picture of a…" . By doing so, visually impaired people understand content that they might not otherwise be able to understand images, clip art, diagrams, paintings, etc.

Tables

Tables need to be structured in a way for easy navigation. In order to achieved that, avoid as much as possible tables within tables, cell mergers and divisions. Instead, use tab reading order, headings and columns. Moreover, once again blank lines must be avoided. A consistent visual presentation for easier reading makes navigation easier by users of screen readers.

Further Document Accessibility Issues

Some other issues that amplify accessibility of a document is hyperlinks that need to offer a clear description of the destination. That is, not using the destination address or phrases like "More", "Click here" etc. Finally, hydrographs need to be avoided. However, if a hydrograph is necessary, make sure you provide the information and elsewhere in the document.

1.32. Check for Accessible Content

Color Contrast

If there is not enough contrast in hue and brightness between the color of the background and the elements being in the foreground, many people with vision problems would have trouble reading the text. This might be due to the fact that there is color insufficient or because monochrome or a shade of gray color is being used. Furthermore, it is quite important not to rely solely on color to give some content to display. Important information, for example, should be different from the rest text not only in color, but in text format, for instance being in bold or underline format.

Below it is presented the way in which the colors of the rainbow are perceived by:


Someone with no vision problems.


Someone with protanopia[27]


Someone with deuteranopia[28]


Someone with tritanopia [29]

Figure 8 : *The way in which an individual perceives the rainbow colors.*

An easy way to check the difference of hue and brightness of the colors between the elements that are in the foreground and the background is good enough to use the tool

[27] http://www-student.unl.edu/~impair/protanopia.html
[28] http://www-student.unl.edu/~impair/protanopia.html
[29] http://www-student.unl.edu/~impair/protanopia.html

Contrast Jonathan Snooks Colour Contrast Check11[30].Another similar tool is *Gez Lemon's Colour Contrast Analyser12*[31]. Both these tools use an algorithm to calculate the color transparency.

One can also change the screen in grayscale or monochrome, making sure that the text is still readable. Using the operating system Mac OS X14 there is great potential for this issue to **Universal Access**, allowing the user to experiment with the colors of the screen.

Document Title

The title of a document is important for many reasons. In the majority of times, it is the first thing that an Assistive Technology will present. In addition to this, it is displayed in the title bar of the window, and during the printing of a document. The descriptive titles of documents are very useful to everyone.

Therefore, it is important to check that each document has a unique and descriptive title. Still, the title should not use punctuation too much. There is no set of rules on which characters are used as separators in the title. However, the titles of the documents should definitely not contain punctuation used for decorative purposes, such as ":: Title ::" or ".. == Title == ...". Any punctuation character is read by screen readers, which can be tiring or confusing.

Data Tables

Tables should not be used for layout, data included in the tables should be marked appropriately to use the available access that enhances the elements and attributes.

When tables are used for labeling the elements, they represent just a layout. Regular users can get a feel for the relationship between the header and the data in the table. However, individuals with severe vision problems or not cannot do this. A table to be accessible to people who use screen readers or other assistive technology, should

[30] http://www.snook.ca/technical/colour_contrast/colour.htm l
[31] http://juicystudio.com/services/colourcontrast.php)

present the original of the content of the table, before the presentation of the data in the table.

Screen Reading Program

Experiencing how content is presented to someone who cannot see, helps to identify several problem areas. If the user has full sight, it is very difficult to imagine how to use a software application without seeing. Below, a list of screen readers that are more prevalent is presented:

- JAWS32
- Window-Eyes33
- Supernova34
- IBM Home Page Reader35

Accessible Content

If the software application has been assessed and passed all the checkpoints mentioned above, it is pretty safe to assume that the application is accessible by people with disabilities. This, unfortunately, does not necessarily mean that the content is understandable to all.

It should be borne in mind that the clumsy and incoherent script code cannot be understood even for highly intelligent people, therefore, the creation and presentation of content that is truly accessible to everyone, can be a tricky affair.

Obviously, understanding the content of a software application can be even more problematic for people with some sort of cognitive impairment or learning difficulty (Hudson, Weakley and Firminger, 2005).

[32] http://www.freedomscientific.com/fs_products/JAWS_HQ.asp#Downloads
[33] http://www.gwmicro.com/Window-Eyes/Demo
[34] http://www.dolphincomputeraccess.com/downloads/index.asp
[35] http://www-3.ibm.com/able/dwnlds/hpr4trial.html

1.33. The Most Common Errors in the Implementation of Accessibility

Not using detailed alternative text. The content developers often place many alternative texts (alt-alternative text) in the images, assuming that this will help screen readers. The truth is that the alternative text should be **short** and **concise** and should not contain more or less information than required in order to understand what is shown in the picture. Images that act simply as decorative elements on the application, without any functionality, should either not contain alternative text or have the following format: alt = "", so as to be ignored by screen readers. The introduction of the alternative text that has no value, it will just be harder and will tire more the users who use screen readers.

Using non-accessible forms. In case of using communication forms, or any type of input field on a webpage, one should make sure that they are accessible to everyone by providing clear labeling. In case of not using a <label> element in the code for each field, for instance, visitors using screen readers or speech input will face problems navigating in the form. Moreover, avoid placing labels inside the input field, alternatively place labels directly over their respective fields.

Not using access keys. There are some key combinations used by default for some functions. For instance, the combination of the keys ALT + LEFT SHIFT + PRINT SCREEN changes the color contrast of the screen helping visually impaired more easily to read the information. However, the use of access keys should be used cautiously in order to avoid confusion with the shortcut key functions, namely those associated with screen readers.

Not using table summary. The table summary is a summary of the whole table. Screen readers read first the summary table and then move to the content of the table. Even with data tables, a summary table is only necessary if there is insufficient information.

Forgetting the content. The way it which the content of a software application is built on is a huge part of accessibility. A software application might be perfectly coded and conform to the highest coding standards. However, if the content is poorly structured it will only lead to the feeling that the navigation of the application is quite difficult or impossible for users with some kind of disability.

Insufficient color contrast. For people with visual impairments, inadequate color contrast between the background color and the text color might toughen to read the content of a website. The recommended contrast ratio differ based on the size of the text. Thus, it is recommended to use a color contrast checker to evaluate whether the website's colors are within the right ratio.

Using inaccurate HTML heading structure. Page structure in a HTML format is meantingful for visitors who use screen readers to access the contents of a website. Inaccurate heading structure makes the content unorganized and very complex to navigate. For instance, use bold feature for text, rather than proper heading ranking. Headings should be nested with the most essential heading having rank 1 (<h1>) with subheadings proceeding in order.

Missing WAI-ARIA attributes: The Web Accessibility Initiative – Accessible Rich Internet Applications (WAI-ARIA) is a technical requirement applied by web developers to create accessible interactive web content. Interactive content contains features such as drag-and-drops, accordions, or sliders. However, this kind of interactive content cannot interfere with users that rely on screen readers or speech instructions if they're not implemented properly.

Using hyperlinks without text alternatives. Hyperlinks on a website should include descriptive plain text in the source code. In case of linked images, the text alternative for the image should indicate the destination of the hyperlink. Since URLs are not always descriptive of their destination, it is essential to contain a brief text alternative that permits screen reader visitors to know where they are navigating to by clicking on the hyperlink. This is particularly supportive if the user is looking for definite information on a website.

Using buttons without alternative text: In case of using buttons on a webpage, alternative text should be provided. Without alternative text, a screen reader user will not be able to describe the buttos' function and will not be able to navigate that part of the webpage. For instance, if there is search bar on the webpage, ensure that the search button has alt text stating "Submit search".

Uneven spacing in text: It should be used even space in text so as it will not incommode people with cognitive disabilities to read the text. For example, some words might be placed so closely each other that the user is not able to distinguish where one word ends and the other begins. Moreover, enough space between the lines of text should also be taken into account, so it will be more helpful to distinguish where the paragraph ends.

There is a number of important issues on accessible content, some of which include:

- **Do not worry about accessibility issues.** In fact, users of the software application suffering from some kind of disability, rarely consider accessibility issues. As users tend not to consult the help guides for each application. Although it is not wrong to develop an application that complies with the rules of accessibility. However, it is needed not spending too much time, because it actually is not used much.
- **Do not worry about the shortcuts**. Most screen readers do not support the tags indicating shortcuts, resulting in the fact that it is not really beneficial for people with disabilities.
- **Do not forget to listen to the screen reader.** As one develop his/her application or website, he/she should check whether it is accessible to visual impaired. In particular, one should listen to screen readers, so as to make sure that the accessibility of this application is that intended.

1.34. Ensuring Elegant Transformation

By following these guidelines, content developers can create webpages with conversion advantage. Webpages that are converted to an advantage remain accessible to physical, sensory and cognitive disability. Here are some key pointers turning a non-accessible webpage to an accessible webpage:

- The separate structure from the presentation (concerns the separation between content, structure and presentation).
- Text need to be provided in a way that is accessible to almost all browsers and accessible to almost all users.
- Create documents that can be accessible even if the user cannot see or hear. Provide information that serves the same purpose as operating audio or video in a manner suitable for an alternative channel sensor. This does not mean creating a pre-recorded version of an entire webpage to make it accessible to users dealing with vision disabilities. Users dealing with vision disabilities can use screen reading technology to render all the information in the text of a page.
- Create documents that are not based on one type of material. Pages should be accessible to people who do not have mice, or have small screens, with low resolution screen, black and white screens, without screens, with only voice or text output, etc

1.35. Conclusion

In this chapter, it was described in detail the issue of disability including the challenges that the disable faced. Furthermore, there was an elaborate description of the terms **Special Education**, as well as the **Inclusive Education**. In addition to this, there were mentioned ways supporting the concept of Greek special education system.

In current chapter, the importance of ICT tools in teaching process for students with disabilities was also stressed. More specifically, there was a description of the most widespread **Assistive Technologies** used in education system by disabled students, teaching methods that Educators shall follow in order to offer greater support to students with special education needs. Also, **accessibility** issues in documents, computer software and web-content were mentioned as well as ways to check accessibility on content and the most common accessibility errors in design and implementation were presented.

Particularly, in the current chapter, challenges were pointed out that disabled users faced regarding access to a computer software application and certain Assistive Technologies most commonly used. The guidelines mentioned in this chapter explain how application content can be made accessible to people with disabilities. These instructions apply to all content developers. The main objective of the guidelines is to promote accessibility. Nevertheless, implementation of the guidelines will also make content more available to all users, the implementation of these guidelines will also help visitors of a website to find information faster. Finally, the above guidelines in no way discourage content developers from using images, video, etc., instead it is explained how to convert multimedia content more accessible to a broad audience.

CHAPTER 2º

Study Design

In this chapter, it is described the study used in the context of the current Phd thesis. More specifically, the purpose and the state of the study are being presented. Moreover, the hypothesis of the study based on previous literature and research sources is pointed out, as well as the methodology and the subject of the study are being explained. Finally, the purpose and the objectives are being presented as well as the characteristics of the population of the sample are also described, in detail. Everything described below, is a personal contribution of the author.

2.1. Purpose of the Study

The purpose of this study is to examine how familiar are Educators using ICT tools during the learning process of students with disabilities both in special and mainstream school setting, in Greece. More specifically, to define views and feelings regarding the benefits of using ICT tools for students with vision, speech and auditory disabilities, intellectual and cognitive disabilities, as well as physical impairments. Lastly, to investigate how much Educators are cognizant of web accessibility issues, applying accessibility tests and how capable Educators are to create comprehensible and navigable web and non-web content accessible by the disable.

2.2. State of the Study (Objective of the Study)

This study will attempt to answer the following questions:

2.1. How familiar are Educators using ICT tools during the learning process of students with disabilities both in special and mainstream school setting, in Greece?

2.2. What are the views and the feelings of Educators regarding the use of ICT tools for students with vision, speech and auditory disabilities, intellectual and cognitive disabilities, as well as physical impairments?

2.3. How much are Educators cognizant of web accessibility issues, of applying accessibility tests and how capable are Educators of creating comprehensible and navigable web and non-web content?

2.3. Hypothesis of the Study

The question for this study is to what extent Greek Educators use ICT tools in order to support learning process for students with disabilities, and to what extent Educators are familiar with accessibility issues. According to the study and previous researches, the hypothesis is that Educators use to a large extent ICT tools in order to support the learning process of students with all kind of disabilities. However, not all of the Educators are specialized in all kind of disabilities. For instance, some Educators are more specialized in vision impairments, while others are in auditory impairments.

2.4. Method

The main reason that this study was designed and implemented is to explore and present views and feelings of Educators in using ICT tools during learning process of students with all kind of disabilities (Intellectual Disabilities, Cognitive Disabilities, Vision and auditory impairments, speech and physical difficulties), in Greece, as well as to what extent Greek Educators and all stakeholders serve special education system (i.e. Psychologist, Speech Therapist, Physiotherapist) are familiar with accessibility issues.

Stage 1: Preliminary Analysis

This stage involves the identification and targeting of the research. Selected key criteria defined the basic parameters conducted based on how ICT tools are used by Educators during learning process and whether Educators are knowledgeable of sampling procedure for the conduct of research. In particular, during this step an investigation was taken place in order to clarify research gaps in this field so as to define the purpose and the objectives of the current study.

- **Stage 2: Data Collection Instrument – Validation and reliability of the instrument - Population and Sample (Developing a questionnaire - Conducting research and creating the database with the data)**

Based on the results of the previous stage, a finalized in specialized structured questionnaire survey was conducted. The questionnaire was designed online, while it was forwarded via e-mail to Primary and Secondary Education Teachers as well as Special Assistant and Special Educational Staff (e.g. Psychologist, Speech Therapist, Physiotherapist). Furthermore, the particular questionnaire was connected with an online database so as the results will be saved immediately, just by pressing the button "*submit*" in excel format. The aim of the questionnaire survey was to obtain updated responses in relation to the current state of the use of ICT tools and accessibility issues in Greece by Educators and other stakeholders serve in special schools. The survey was conducted during the school year 2018-2020. More particularly, the questionnaire is divided into two groups of questions. The questionnaire is presented in the Appendix I.

The first group of questions is referring to the demographic data of each individual and is consisted by 9 questions. Those are:

- Gender;
- Age;
- Specialty of the educator;
- Other studies that might he or she attended;
- Whether he or she attended a training in ICT;
- The position of service that he or she poses;
- Years of teaching experience;
- Years of teaching experience in special education and lastly;
- The school unit Size (how many students are attending to his/her school unit).

According to the theoretical framework as developed in the previous Chapter, it has been found that these variables consists of a significant factor regarding their attitude towards adoption of ICT tools and develop accessible contents.

The second part of the questionnaire is the main part of the survey referring to the aspects of all stakeholders of special education based on the use of the ICT tools and accessibility issues. This part of the questionnaire contains 41 questions (see Appendix I).

Validation and Reliability of the Instrument (Cronbach's Alph)

The main tool of the present research was the questionnaire which was created with targeted questions. A specific reliability indicator called Cronbach's Alpha was used to check the reliability of the questionnaire. This indicator is one of the many used and shows how reliable the findings of statistical analysis are. The literature states that the index in order to provide reliable results must have a value equal to or greater than 0.7 (Bernstein & Nunnally, 2001), (Tavakol & Dennick, 2011). However, other researchers insist on a more stringent value equal to or greater than 0.8 (Hatcher, 1994).

Reliability Statistics

Cronbach's Alpha	N of Items
,978	41

Figure 9: *Cronbach's Alpha reliability test.*

Detailed results of the reliability of the variables used are listed in the table below. The last column of the tables displays the reliability value that results if the respective variable is removed.

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
1. I have general knowledge about the possibilities that ICT offers to students with special educational needs.	144,17	1137,157	,820	.	,977
2. I am aware of the difficulties created by different types of disabilities regarding the use of ICT.	144,17	1144,162	,786	.	,977

3. I know how I choose specific ICT tools based on the physical, sensory and cognitive characteristics of every student.	144,43	1140,878	,763	.	,977
4. I know ICT training practices for students with different types of disabilities.	144,31	1142,858	,792	.	,977
5. I know applications that are supported by modern technology mobile phones and relate to educational practices in special education.	144,66	1132,131	,775	.	,977
6. I consider that I am able to find on the Internet educational material for students with special educational needs.	144,09	1151,447	,746	.	,977
7. I feel ready to help a student with special educational needs to benefit from the use of ICT.	144,17	1138,420	,802	.	,977
8. I know how to design activities with educational software for students with special educational needs.	144,40	1136,739	,768	.	,977
9. I am able to explain the possibilities offered by a braille typewriter for students with visual impairments and cognitive disabilities.	144,20	1137,864	,776	.	,977
10. I know the possibilities offered by screen readers for the visually impaired and cognitively disabled.	144,40	1119,514	,885	.	,976
11. I know different types of equipment connected to the computer and used by students with visual impairments.	144,63	1126,857	,811	.	,977
12. I am familiar with various screen	144,66	1118,868	,860	.	,976

magnification software such as JAWS, used by students with visual impairments.					
13. I can design teaching materials in Word Editor, eliminating aspects that are difficult for students with visual impairments.	144,57	1137,375	,731	.	,977
14. I know specific browsers for the visually impaired and cognitively disabled.	144,66	1135,748	,745	.	,977
15. I know websites with educational material for students with visual impairments.	144,37	1139,029	,743	.	,977
16. I am able to apply teaching strategies and program adaptations supported by ICT to facilitate the inclusion of students with vision problems.	144,54	1136,230	,767	.	,977
17. I know the possibilities that ICT offer to students with visual impairments and cognitive disabilities.	144,31	1136,886	,770	.	,977
18. I know sign language.	145,06	1146,140	,385	.	,979
I am familiar with various computer training programs used to enhance oral and written speech.	145,20	1140,448	,597	.	,977
20. I know various websites with educational material for studnets with hearing problems.	144,77	1144,541	,566	.	,977
21 I am able to apply ICT-based teaching strategies to facilitate the integration of hearing-impaired students.	145,23	1136,158	,609	.	,977
22. I know the possibilities that ICT	145,03	1133,712	,620	.	,977

offer to students with hearing problems.					
23. I know different speech retraining programs.	145,29	1142,387	,569	.	,977
24. I know different types of keyboards for students with mobility problems.	144,46	1159,139	,558	.	,977
25. I know computer software that controls the computer with voice command.	144,60	1132,260	,778	.	,977
26. I know educational material for students with mobility problems.	144,37	1153,785	,604	.	,977
27. I am able to implement ICT-based teaching strategies to facilitate the integration of students with mobility problems.	144,37	1148,560	,731	.	,977
28. I know the possibilities that ICT offer to students with mobility problems and cognitive disabilities.	144,29	1142,789	,780	.	,977
29. I know educational programs used to support cognitive skills..	144,49	1147,256	,677	.	,977
30. I know various websites with educational material for students with cognitive disabilities.	144,26	1150,297	,722	.	,977
31. I am able to implement teaching strategies using ICT tools to facilitate the integration of students with cognitive disabilities.	144,31	1137,690	,778	.	,977
32. I am able to make adjustments to curricula supported by ICT tools and addressing to cognitive disabilities.	144,37	1143,450	,719	.	,977
33. I know various websites with	144,14	1152,697	,715	.	,977

educational material for students with cognitive disabilities.					
34. I know the possibilities offered by ICT tools to students with cognitive disabilities.	144,20	1137,118	,831	.	,977
35. I know the possibilities offered by operating systems, turning the work environment more accessible to students with cognitive disabilities.	144,57	1129,911	,778	.	,977
36. I know what website accessibility testing is.	145,31	1127,068	,795	.	,977
37. I am familiar with the general WAI / W3C website accessibility guidelines.	145,46	1133,991	,699	.	,977
38. I am able to create websites with high accessibility parameters.	145,63	1137,881	,648	.	,977
39. I am able to adapt a computer, including peripherals, to the educational needs of every student.	145,29	1121,660	,769	.	,977
40. I know various institutions related to the study and research of the accessibility of websites.	145,46	1124,345	,748	.	,977
41. I am able to mention various accessibility tests.	145,40	1125,887	,715	.	,977

Figure 10: *Reliability Results of Variables Cronbach's Alph.*

Presentation of the Population of the Sample

The sample was consisted of 210 individuals, as was attempted to be as representative as possible of the total population working in public school in Greece. More specifically, Primary and Secondary Education Teachers, as well as Special Assistant and Special Educational Staff offering services in public schools both in large urban center, such as Athens and Thessaloniki as well as in rural area (Serres, Kavala, Xanthi etc.) and islands (Ikaria, Lemnos, Crete etc.).

Of the total participants (N = 210) 120 (57.12%) were women and 90 (42.9%) were men. The mean age of the participants was estimated from 36 to 45 (mean = 3.54) years and the standard deviation was estimated to be 1.58. In particular, the age of 48 participants of the total sample is between 31-35 years old, while 20% of the sample age is between 36-40 and another 20% of the sample age is between 41-45 years old. 36 of 210 participants are older than 51 years while the youngest participants are under 30 years old with percentage 8.6% (n = 18).

The largest percentage of individuals (22.9%, n = 48) were EDUCATORS OF COMPUTERS, followed by PHILOLOGISTS (14.3%, n = 30), MATHEMATICIANS (11.4%, n = 24), EDUCATORS OF SPECIAL EDUCATIONAL NEEDS (8.6%, n =18). Regarding the composition of the sample in terms of educational level, 85.7% (n = 180) had an additional degree in addition to the basic (other degree, postgraduate, Phd). More specifically, 150 out of 180 participants had attended postgrafuate diploma while 12 out of 180 participants had Phd .

Regarding the training in new technologies 42.9% (n = 190) of the participants were self-taught, 22.9% (n = 48) attended three-month / six-month training, 20% (n = 42) attended short-term training and only 14.3% (n = 30) attended annual training. Concerning the type of employment, 80% (n = 168) were full-time with a contract under Public Law, 11.4% (n = 24) were full-time with a contract under Private Law, 5.7% (n = 12) were part-time with a Private Law contract and only 2.9% (n = 6) were hourly paid under a Private Law contract.

The average years of teaching experience of the participants was calculated from 11 to 15 years (mean = 3.09) years and the standard deviation was calculated equal to 1.86. The average years of teaching experience in Special Education of the participants was

calculated from 6 to 10 years (mean = 2.40) years and the standard deviation was calculated equal to 1.40.

Finally, the average of student population of the school unit participants serve is equal to 118 students and the standard deviation was calculated equal to 102. Paticularly, 60 pariticipants of the sample stated that the schoold unit is 80 students, followed by 30 participants metioned that the school unit where they work is 180 students.

- **Stage 3: Data Analysis- Descriptive Analysis – Comparative Statistics- Correlation and Regression Study**

This stage involved the analysis of the data of the questionnaires. The data recorded in the questionnaire to be processed through special software. In particular, the software used for the process of the selected data was *IBM SPSS Statistics 20.0.* Descriptive analysis, Inferential study is conducted as well as Correlational and Regression study.

- **Step 4: Results**

This stage indicates the results of the whole study. Fistly, the Descriptive Analysis is taken place, including frequencies, mean, standard deviation and percentages, in detail. Then, Comparative Statistics (T-Test) and Correlation of Numerical Cross Variables (Correlation) results are presented. Finally, Statistical Forecast (Regression) is conducted predicting the values of a dependent variable criterion by one or more independent prediction variables. Particularly, in Chapter 3, charts and tables are presented for better understanding of the results of the study.

- **Step 5: Conclusions and Suggestions for future Research**

In the final stage of the research and post-processing of data recorded, the results and the most notable conclusions of the questionnaire survey are presented. Finally, based on the findings of the current research, suggestions for future research are introduced to extend the conclusions that can be drawn from this study.

2.5. Conclusion

In this chapter, it was described the purpose of the study. In particular, there is an analysis of the state of the study, including the objectives and the hypothesis of the study. After that, the methodology and the subject of the study is presented, while the purpose and objectives were stated for greater understanding.Moreover, in this chapter, it was an elaborative description of the reliability results of variables as well as the population of the sample.

In the next chapter, results of the study are presenting. More specifically, there is a descriptive study presenting the demographic characteristics of the sample in detail as well as table graphics introduce the results of every question of the survey. In the sequel, comparative statistic are made. Correlation of numerical cross variables methods and statistical forecast are applied, revealing the overall conclusions of the research.

CHAPTER 3º

Results of the Study

In this chapter, it is presented in detail the results of the study of the current PhD. In particular, Descriptive study, Comparative statistics are made presented the results using table graphics and description of each question for greater understanding. Thereinafter, correlation of numerical cross variables and statistical forecast methods are used for the estimation of relationships between dependent variables and one or more independent variables.

3.1. Descriptive Study

Descriptive study is used to study the patterns or principles of behavior of individuals in a social group. The Likert[36] scale uses standardized questionnaire responses to determine the relative intensity of different items. It is the most common measuring scale. In the second part of the present research, a questionnaire was used which measures the individual aspects of self-assessment of Educators' knowledge, skills and abilities with a 5-point Likert scale, from 1 = "strongly disagree" to 5 = "strongly agree". The dependent variables of the research are defined as the 41 self-assessment

The descriptive study is divided into two parts.

A. data concerning the demographic data of the participants such as gender and age etc., and

B. the views of the participating Educators regarding the main part of the research.

The following tables show the frequency, percentage, valid percentage and aggregate percentage, also at the end of each table are given the mean and Std data. Deviation.

[36] Rensis Likert (1903-1981): Methodologist, statistician, social psychologist, co-founder of the Institute of Social Research at the University of Michigan, the most important in the world of its kind.

A. DEMOGRAPHIC CHARACTERISTICS

Sex

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	90	42.9	42.9	42.9
	Female	120	57.1	57.1	100.0
	Total	210	100.0	100.0	

Figure 11 : *Gender of the sample.*

Mean: 1.57

Std. Deviation: 0.496

Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	<30	18	8.6	8.6	8.6
	31-35	48	22.9	22.9	31.4
	36-40	42	20.0	20.0	51.4
	41-45	42	20.0	20.0	71.4
	46-50	24	11.4	11.4	82.9
	>51	36	17.1	17.1	100.0
	Total	210	100.0	100.0	

Figure 12 : *Age of the sample.*

Mean: 3.54

Std. Deviation: 1.578

Main Specialty

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	EDUCATOR OF PRIMARY SCHOOL	12	5.7	5.7	5.7
	SPEECH THERAPIST	4	1.9	1.9	7.6
	PSYCHOLOGIST	6	2.9	2.9	10.5
	PHILOLOGIST	30	14.3	14.3	24.8
	MATHEMATICIAN	24	11.4	11.4	36.2
	EDUCATOR OF NATURAL SCIENCES	5	2.4	2.4	38.6
	EDUCATOR OF FRENCH PHILOLOGY	1	.5	.5	39.0
	EDUCATOR OF ENGLISH PHILOLOGY	5	2.4	2.4	41.4
	EDUCATOR OF GERMAN PHILOLOGY	1	.5	.5	41.9
	EDUCATOR OF ARTS	2	1.0	1.0	42.9
	EDUCATOR OF GYMNASTICS	12	5.7	5.7	48.6
	EDUCATOR OF INFORMATICS	12	5.7	5.7	54.3
	EDUCATOR OF SPECIAL EDUCATIONAL NEEDS	18	8.6	8.6	62.9
	EDUCATOR OF BUSINESS ADMINISTRATION	6	2.9	2.9	65.7
	EDUCATOR OF COMPUTERS	48	22.9	22.9	88.6
	EDUCATOR OF AGRICULTURE	4	1.9	1.9	90.5
	EDUCATOR OF NUTRITION	4	1.9	1.9	92.4
	EDUCATOR OF FORRESTRY SCIENTIST	11	5.2	5.2	97.6
	EDUCATOR OF THEATRE	1	.5	.5	98.1
	EDUCATOR OF COMPUTER PROGRAMMER	1	.5	.5	98.6
	HAIRDRESSER	3	1.4	1.4	100.0
	Total	210	100.0	100.0	

Figure 13 : *Specialty of the sample.*

Multiple Response

Case Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Other_Studies * $ OTHER_STUDIES	180	85.7%	30	14.3%	210	100.0%

Figure 14 : *Other Studies of the sample.*

Other_Studies * $ OTHER_STUDIES Crosstabulation

			$OTHER_STUDIES[a]			Total
			Degree from another scientific field	Postgraduate Diploma	Doctoral Diploma	
Other_Studies	YES	Count	54	150	12	180
Total		Count	54	150	12	180

Percentages and totals are based on respondents.
a. Dichotomy group tabulated at value 1.

Training in New Technologies

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Short-term training	42	20.0	20.0	20.0
	Quarterly / Semester training	48	22.9	22.9	42.9
	Annual training	30	14.3	14.3	57.1
	Self-taught	90	42.9	42.9	100.0
	Total	210	100.0	100.0	

Figure 15 : *Other Studies and Training in New Technologies of the sample.*

Mean: 3,80

Std. Deviation: 1,193

Type of Employment					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Full-time contract under Private Law	24	11.4	11.4	11.4
	Part time with a contract under Private Law	12	5.7	5.7	17.1
	Hourly wage with a contract under Private Law	6	2.9	2.9	20.0
	Full-time contract under Public Law	168	80.0	80.0	100.0
	Total	210	100.0	100.0	

Figure 16 : *Position of Service of the sample.*

Mean: 3.51

Std. Deviation: 1.027

Years of Teaching Experience					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1-5	36	17.1	17.1	17.1
	6-10	84	40.0	40.0	57.1
	11-15	24	11.4	11.4	68.6
	21-25	36	17.1	17.1	85.7
	26-30	18	8.6	8.6	94.3
	>31	12	5.7	5.7	100.0
	Total	210	1000	100.0	

Figure 17 : *Years of Teaching of the sample.*

Mean: 3.09

Std. Deviation: 1.862

Years of Teaching Experience in Special Education

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1-5	48	22.9	22.9	22.9
	6-10	114	54.3	54.3	77.1
	11-15	6	2.9	2.9	80.0
	16-20	6	2.9	2.9	82.9
	21-25	30	14.3	14.3	97.1
	26-30	6	2.9	2.9	100.0
	Total	210	100.0	100.0	

Figure 18 : *Years of Teaching in Special Education of the sample.*

Mean: 2.40

Std. Deviation: 1.401

School Unit-Student Potential (Number of students attending the service school unit).

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	30	18	8.6	8.6	8.6
	50	12	5.7	5.7	14.3
	60	18	8.6	8.6	22.9
	70	12	5.7	5.7	28.6
	80	60	28.6	28.6	57.1
	85	6	2.9	2.9	60.0
	100	12	5.7	5.7	65.7
	120	6	2.9	2.9	68.6
	130	6	2.9	2.9	71.4
	150	12	5.7	5.7	77.1
	160	6	2.9	2.9	80.0
	180	30	14.3	14.3	94.3
	330	6	2.9	2.9	97.1
	600	6	2.9	2.9	100.0
	Total	210	100.0	100.0	

Figure 19 : *School unit in which the interviewee is occupied.*

Mean: 118.14

Std. Deviation: 102.197

B. MAIN PART OF RESEARCH

1. I have general knowledge about the possibilities that ICT offers to students with special educational needs.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	30	14.3	14.3	14.3
	Undecided	12	5.7	5.7	20.0
	Agree	78	37.1	37.1	57.1
	Strongly Agree	90	42.9	42.9	100.0
	Total	210	100.0	100.0	

Figure 20 : *Position of the sample about the possibilities that ICT offers to students with special educational needs.*

Mean: 4.09

Std. Deviation: 1.027

2. I am aware of the difficulties created by different types of disabilities regarding the use of ICT.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	24	11.4	11.4	11.4
	Undecided	12	5.7	5.7	17.1
	Agree	96	45.7	45.7	62.9
	Strongly Agree	78	37.1	37.1	100.0
	Total	210	100.0	100.0	

Figure 21 : *Position of the sample regarding the difficulties created by different types of disabilities regarding the use of ICT.*

Mean: 4.09

Std. Deviation: 0.939

3. I know how I choose specific ICT tools based on the physical, sensory and cognitive characteristics of every student.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	42	20.0	20.0	20.0
	Undecided	6	2.9	2.9	22.9
	Agree	108	51.4	51.4	74.3
	Strongly Agree	54	25.7	25.7	100.0
	Total	210	100.0	100.0	

Figure 22 : *Position of the sample on choosing specific ICT tools based on the physical, sensory and cognitive characteristics of every student.*

Mean: 3.83

Std. Deviation: 1.030

4. I know ICT training practices for students with different types of disabilities.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	30	14.3	14.3	14.3
	Undecided	12	5.7	5.7	20.0
	Agree	108	51.4	51.4	71.4
	Strongly Agree	60	28.6	28.6	100.0
	Total	210	100.0	100.0	

Figure 23 : *Position of the sample on ICT training practices for students with different types of disabilities.*

Mean: 3.94

Std. Deviation: 0.957

5. I know applications that are supported by modern technology mobile phones and relate to educational practices in special education.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	6	2.9	2.9	2.9
	Disagree	54	25.7	25.7	28.6
	Undecided	6	2.9	2.9	31.4
	Agree	96	45.7	45.7	77.1
	Strongly Agree	48	22.9	22.9	100.0
	Total	210	100.0	100.0	

Figure 24 : *Position of the sample on applications that are supported by modern technology mobile phones and relate to educational practices in special education.*

Mean: 3.60

Std. Deviation: 1.179

6. I consider that I am able to find on the Internet educational material for students with special educational needs.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	18	8.6	8.6	8.6
	Undecided	6	2.9	2.9	11.4
	Agree	108	51.4	51.4	62.9
	Strongly Agree	78	37.1	37.1	100.0
	Total	210	100.0	100.0	

Figure 25 : *Position of the sample on how able they feel to find on the Internet educational material for students with special educational needs.*

Mean: 4.17

Std. Deviation: 0.847

7. I feel ready to help a student with special educational needs to benefit from the use of ICT.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	30	14.3	14.3	14.3
	Undecided	12	5.7	5.7	20.0
	Agree	78	37.1	37.1	57.1
	Strongly Agree	90	42.9	42.9	100.0
	Total	210	100.0	100.0	

Figure 26 : *Position of the sample on how ready they feel to help a student with special educational needs to benefit from the use of ICT.*

Mean: 4.09

Std. Deviation: 1.027

8. I know how to design activities with educational software for students with special educational needs.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	12	5.7	5.7	5.7
	Disagree	18	8.6	8.6	14.3
	Undecided	18	8.6	8.6	22.9
	Agree	102	48.6	48.6	71.4
	Strongly Agree	60	28.6	28.6	100.0
	Total	210	100.0	100.0	

Figure 27 : *Position of the sample on designing activities with educational software for students with special educational needs.*

Mean: 3.86

Std. Deviation: 1.102

9. I am able to explain the possibilities offered by a braille typewriter for students with visual impairments and cognitive disabilities.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	6	2.9	2.9	2.9
	Disagree	24	11.4	11.4	14.3
	Undecided	6	2.9	2.9	17.1
	Agree	90	42.9	42.9	60.0
	Strongly Agree	84	40.0	40.0	100.0
	Total	210	100.0	100.0	

Figure 28 : *Position of the sample on explaining the possibilities offered by a braille typewriter for students with visual impairments.*

Mean: 4.06

Std. Deviation: 1.070

10. I know the possibilities offered by screen readers for the visually impaired.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	12	5.7	5.7	5.7
	Disagree	30	14.3	14.3	20.0
	Undecided	18	8.6	8.6	28.6
	Agree	66	31.4	31.4	60.0
	Strongly Agree	84	40.0	40.0	100.0
	Total	210	100.0	100.0	

Figure 29 : *Position of the sample on possibilities offered by screen readers for the visually impaired.*

Mean: 3.86

Std. Deviation: 1.248

11. I know different types of equipment connected to the computer and used by students with visual impairments.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	12	5.7	5.7	5.7
	Disagree	42	20.0	20.0	25.7
	Undecided	12	5.7	5.7	31.4
	Agree	90	42.9	42.9	74.3
	Strongly Agree	54	25.7	25.7	100.0
	Total	210	100.0	100.0	

Figure 30 : *Position of the sample on different types of equipment connected to the computer and used by students with visual impairments.*

Mean: 3.63

Std. Deviation: 1.224

12. I am familiar with various screen magnification software such as JAWS, used by students with visual impairments.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	12	5.7	5.7	5.7
	Disagree	48	22.9	22.9	28.6
	Undecided	18	8.6	8.6	37.1
	Agree	66	31.4	31.4	68.6
	Strongly Agree	66	31.4	31.4	100.0
	Total	210	100.0	100.0	

Figure 31 : *Position of the sample on various screen magnification software such as JAWS, used by students with visual impairments.*

Mean: 3.60

Std. Deviation: 1.295

13. I can design teaching materials in Word Editor, eliminating aspects that are difficult for students with visual impairments.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	12	5.7	5.7	5.7
	Disagree	30	14.3	14.3	20.0
	Undecided	18	8.6	8.6	28.6
	Agree	102	48.6	48.6	77.1
	Strongly Agree	48	22.9	22.9	100.0
	Total	210	100.0	100.0	

Figure 32 : *Position of the sample on designing teaching materials in Word Editor, eliminating aspects that are difficult for students with visual impairments.*

Mean: 3.69

Std. Deviation: 1.143

14. I know specific browsers for the visually impaired.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	6	2.9	2.9	2.9
	Disagree	48	22.9	22.9	25.7
	Undecided	18	8.6	8.6	34.3
	Agree	90	42.9	42.9	77.1
	Strongly Agree	48	22.9	22.9	100.0
	Total	210	100.0	100.0	

Figure 33 : *Position of the sample on specific browsers for the visually impaired.*

Mean: 3.60

Std. Deviation: 1.154

15. I know websites with educational material for students with visual impairments.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	6	2.9	2.9	2.9
	Disagree	30	14.3	14.3	17.1
	Undecided	12	5.7	5.7	22.9
	Agree	96	45.7	45.7	68.6
	Strongly Agree	66	31.4	31.4	100.0
	Total	210	100.0	100.0	

Figure 34 : *Position of the sample on websites with educational material for students with visual impairments.*

Mean: 3.89

Std. Deviation: 1.092

16. I am able to apply teaching strategies and program adaptations supported by ICT to facilitate the inclusion of students with vision problems.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	6	2.9	2.9	2.9
	Disagree	36	17.1	17.1	20.0
	Undecided	24	11.4	11.4	31.4
	Agree	90	42.9	42.9	74.3
	Strongly Agree	54	25.7	25.7	100.0
	Total	210	100.0	100.0	

Figure 35 : *Position of the sample on applying teaching strategies and program adaptations supported by ICT to facilitate the inclusion of students with vision problems.*

Mean: 3.71

Std. Deviation: 1.113

17. I know the possibilities that ICT offer to students with visual impairments.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	6	2.9	2.9	2.9
	Disagree	30	14.3	14.3	17.1
	Undecided	6	2.9	2.9	20.0
	Agree	96	45.7	45.7	65.7
	Strongly Agree	72	34.3	34.3	100.0
	Total	210	100.0	100.0	

Figure 36 : *Position of the sample on possibilities that ICT offer to students with visual impairments.*

Mean: 3.94

Std. Deviation: 1.097

18. I know sign language.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	66	31.4	31.4	31.4
	Disagree	24	11.4	11.4	42.9
	Undecided	6	2.9	2.9	45.7
	Agree	30	14.3	14.3	60.0
	Strongly Agree	84	40.0	40.0	100.0
	Total	210	100.0	100.0	

Figure 37 : *Position of the sample whether they know sign language.*

Mean: 3.20

Std. Deviation: 1.758

19. I am familiar with various computer training programs used to enhance oral and written speech.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	24	11.4	11.4	11.4
	Disagree	72	34.3	34.3	45.7
	Undecided	12	5.7	5.7	51.4
	Agree	72	34.3	34.3	85.7
	Strongly Agree	30	14.3	14.3	100.0
	Total	210	100.0	100.0	

Figure 38 : *Position of the sample on various computer training programs used to enhance oral and written speech.*

Mean: 3.06

Std. Deviation: 1.311

20. I know various websites with educational material for students with hearing problems.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	18	8.6	8.6	8.6
	Disagree	42	20.0	20.0	28.6
	Undecided	18	8.6	8.6	37.1
	Agree	84	40.0	40.0	77.1
	Strongly Agree	48	22.9	22.9	100.0
	Total	210	100.0	100.0	

Figure 39 : *Position of the sample on various websites with educational material for students with hearing problems.*

Mean: 3.49

Std. Deviation: 1.276

21. I am able to apply ICT-based teaching strategies to facilitate the integration of hearing-impaired students.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	30	14.3	14.3	14.3
	Disagree	72	34.3	34.3	48.6
	Undecided	6	2.9	2.9	51.4
	Agree	66	31.4	31.4	82.9
	Strongly Agree	36	17.1	17.1	100.0
	Total	210	100.0	100.0	

Figure 40 : *Position of the sample on applying ICT-based teaching strategies to facilitate the integration of hearing-impaired students.*

Mean: 3.03

Std. Deviation: 1.387

22. I know the possibilities that ICT offer to students with hearing problems.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	24	11.4	11.4	11.4
	Disagree	66	31.4	31.4	42.9
	Undecided	12	5.7	5.7	48.6
	Agree	54	25.7	25.7	74.3
	Strongly Agree	54	25.7	25.7	100.0
	Total	210	100.0	1000	

Figure 41 : *Position of the sample on possibilities that ICT offer to students with hearing problems.*

Mean: 3.23

Std. Deviation: 1.419

23. I know different speech retraining programs.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	30	14.3	14.3	14.3
	Disagree	72	34.3	34.3	48.6
	Undecided	6	2.9	2.9	51.4
	Agree	78	37.1	37.1	88.6
	Strongly Agree	24	11.4	11.4	100.0
	Total	210	100.0	100.0	

Figure 42 : *Position of the sample different speech retraining programs.*

Mean: 2.97

Std. Deviation: 1.323

24. I know different types of keyboards for students with mobility problems.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	6	2.9	2.9	2.9
	Disagree	24	11.4	11.4	14.3
	Undecided	6	2.9	2.9	17.1
	Agree	144	68.6	68.6	85.7
	Strongly Agree	30	14.3	14.3	100.0
	Total	210	100.0	100.0	

Figure 43 : *Position of the sample on different types of keyboards for students with mobility problems.*

Mean: 3.80

Std. Deviation: 0.922

25. I know computer software that controls the computer with voice command.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	6	2.9	2.9	2.9
	Disagree	48	22.9	22.9	25.7
	Undecided	12	5.7	5.7	31.4
	Agree	90	42.9	42.9	74.3
	Strongly Agree	54	25.7	25.7	100.0
	Total	210	100.0	100.0	

Figure 44 : *Position of the sample on computer software that control the computer with voice command.*

Mean: 3.66

Std. Deviation: 1.172

26. I know educational material for students with mobility problems.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	36	17.1	17.1	17.1
	Undecided	6	2.9	2.9	20.0
	Agree	114	54.3	54.3	74.3
	Strongly Agree	54	25.7	25.7	100.0
	Total	210	100.0	100.0	

Figure 45 : *Position of the sample on educational material for students with mobility problems.*

Mean: 3.89

Std. Deviation: 0.981

27. I am able to implement ICT-based teaching strategies to facilitate the integration of students with mobility problems.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	30	14.3	14.3	14.3
	Undecided	12	5.7	5.7	20.0
	Agree	120	57.1	57.1	77.1
	Strongly Agree	48	22.9	22.9	100.0
	Total	210	100.0	100.0	

Figure 46 : *Position of the sample on implementing ICT-based teaching strategies to facilitate the integration of students with mobility problems.*

Mean: 3.89

Std. Deviation: 0.921

28. I know the possibilities that ICT offer to students with mobility problems.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	30	14.3	14.3	14.3
	Undecided	12	5.7	5.7	20.0
	Agree	102	48.6	48.6	68.6
	Strongly Agree	66	31.4	31.4	100.0
	Total	210	100.0	100.0	

Figure 47 : *Position of the sample on possibilities that ICT offer to students with mobility problems.*

Mean: 3.97

Std. Deviation: 0.973

29. I know educational programs used to support cognitive skills.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	42	20.0	20.0	20.0
	Undecided	12	5.7	5.7	25.7
	Agree	108	51.4	51.4	77.1
	Strongly Agree	48	22.9	22.9	100.0
	Total	210	100.0	100.0	

Figure 48 : *Position of the sample on educational programs used to support cognitive skill.*

Mean: 3.77

Std. Deviation: 1.019

30. I know various websites with educational material for students with cognitive disabilities.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	24	11.4	11.4	11.4
	Undecided	12	5.7	5.7	17.1
	Agree	114	54.3	54.3	71.4
	Strongly Agree	60	28.6	28.6	100.0
	Total	210	100.0	100.0	

Figure 49 : *Position of the sample on various websites with educational material for students with cognitive disabilities.*

Mean: 4.00

Std. Deviation: 0.897

31. I am able to implement teaching strategies using ICT tools to facilitate the integration of students with cognitive disabilities.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	36	17.1	1.,1	17.1
	Undecided	18	8.6	8.6	25.7
	Agree	78	37.1	37.1	62.9
	Strongly Agree	78	37.1	37.1	100.0
	Total	210	100.0	100.0	

Figure 50 : *Position of the sample on implementing teaching strategies using ICT tools to facilitate the integration of students with cognitive disabilities.*

Mean: 3.94

Std. Deviation: 1.070

32. I am able to make adjustments to curricula supported by ICT tools and addressing to cognitive disabilities.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	36	17.1	17.1	17.1
	Undecided	18	8.6	8.6	25.7
	Agree	90	42.9	42.9	68.6
	Strongly Agree	66	31.4	31.4	100.0
	Total	210	100.0	100.0	

Figure 51 : *Position of the sample on making adjustments to curricula supported by ICT tools and addressing to cognitive disabilities.*

Mean: 3.89

Std. Deviation: 1.038

33. I know various websites with educational material for students with cognitive disabilities.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	18	8.6	8.6	8.6
	Undecided	12	5.7	5.7	14.3
	Agree	108	51.4	51.4	65.7
	Strongly Agree	72	34.3	34.3	100.0
	Total	210	100.0	100.0	

Figure 52 : *Position of the sample on various websites with educational material for students with cognitive disabilities.*

Mean: 4.11

Std. Deviation: 0.856

34. I know the possibilities offered by ICT tools to students with cognitive disabilities.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	30	14.3	14.3	14.3
	Undecided	12	5.7	5.7	20.0
	Agree	84	40.0	40.0	60.0
	Strongly Agree	84	40.0	40.0	100.0
	Total	210	100.0	100.0	

Figure 53 : *Position of the sample on possibilities offered by ICT tools to students with cognitive disabilities.*

Mean: 4.06

Std. Deviation: 1.015

35. I know the possibilities offered by operating systems, turning the work environment more accessible to students with cognitive disabilities.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	60	28.6	28.6	28.6
	Undecided	18	8.6	8.6	37.1
	Agree	60	28.6	28.6	65.7
	Strongly Agree	72	34.3	34.3	100.0
	Total	210	100.0	100.0	

Figure 54 : *Position of the sample on possibilities offered by operating systems, turning the work environment more accessible to students with cognitive disabilities.*

Mean: 3.69

Std. Deviation: 1.216

36. I know what website accessibility testing is.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	42	20.0	20.0	20.0
	Disagree	36	17.1	17.1	37.1
	Undecided	30	14.3	14.3	51.4
	Agree	96	45.7	45.7	97.1
	Strongly Agree	6	2.9	2.9	100.0
	Total	210	100.0	100.0	

Figure 55 : *Position of the sample on accessibility testing.*

Mean: 2.94

Std. Deviation: 1.244

37. I am familiar with the general WAI / W3C website accessibility guidelines.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	48	22.9	22.9	22.9
	Disagree	42	20.0	20.0	42.9
	Undecided	30	14.3	14.3	57.1
	Agree	84	40.0	40.0	97.1
	Strongly Agree	6	2.9	2.9	100.0
	Total	210	100.0	100.0	

Figure 56 : *Position of the sample on the general WAI/W3C website accessibility guidelines.*

Mean: 2.80

Std. Deviation: 1.263

38. I am able to create websites with high accessibility parameters.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	54	25.7	25.7	25.7
	Disagree	54	25.7	25.7	51.4
	Undecided	24	11.4	11.4	62.9
	Agree	72	34.3	34.3	97.1
	Strongly Agree	6	2.9	2.9	100.0
	Total	210	100.0	100.0	

Figure 57 : *Position of the sample on creating websites with high accessibility parameters.*

Mean: 2.63

Std. Deviation: 1.270

39. I am able to adapt a computer, including peripherals, to the educational needs of every student.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	48	22.9	22.9	22.9
	Disagree	36	17.1	17.1	40.0
	Undecided	24	11.4	11.4	51.4
	Agree	78	37.1	37.1	88.6
	Strongly Agree	24	11.4	11.4	100.0
	Total	210	100.0	100.0	

Figure 58 : *Position of the sample on adapting a computer, including peripherals to the educational needs of every student.*

Mean: 2.97

Std. Deviation: 1.387

40. I know various institutions related to the study and research of the accessibility of websites.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	54	25.7	25.7	25.7
	Disagree	42	20.0	20.0	45.7
	Undecided	24	11.4	11.4	57.1
	Agree	72	34.3	34.3	91.4
	Strongly Agree	18	8.6	8.6	100.0
	Total	210	100.0	100.0	

Figure 59 : *Position of the sample in various institutions related to the study and research of the accessibility of websites.*

Mean: 2.80

Std. Deviation: 1.372

41. I am able to mention various accessibility tests.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	48	22.9	22.9	22.9
	Disagree	48	22.9	22.9	45.7
	Undecided	30	14.3	14.3	60.0
	Agree	54	25.7	25.7	85.7
	Strongly Agree	30	14.3	14.3	100.0
	Total	210	100.0	100.0	

Figure 60 : *Position of the sample on mentioning various accessibility tests.*

Mean: 2.86

Std. Deviation: 1.400

3.2. Comparative Statistics (T-TEST)

The T-TEST is used to compare the statistical significance of the differences in the means: (a) of the same variable in two different groups of individuals (independent samples), and (b) of two different variables in one, the same group of individuals (dependent samples). The type of comparison used in the present study is a. We compare the independent sex variable (men – women) with each of the 41 dependent variables.

The result of the analysis ends up in two tables. In the first, "Group statistics", descriptive statistical indicators are displayed: the size ("N") of each group, the average ("Mean"), the standard deviation ("Std. Deviation") and the standard error of the average ("Std. Error Mean"). The second table shows the t-test, as follows: two values are calculated, one t-value in case the samples are homogeneous ("Equal variances assumed") and one t-value in case the samples are inhomogeneous ("Equal variances not assumed"). The homogeneity of the dispersion between the compared samples is checked with the Levene test. If the F-value of the Levene test is **statistically significant** ("Sig." <, 050), this means that the samples are inhomogeneous. Then, in addition to the t-value, the degrees of freedom ("df") are given, the level of statistical

significance ("Sig."), the difference between the means ("Mean Difference"), the standard error of the difference of average ("Std. Error Difference") and the limits of the confidence interval of the average difference ("95% Confidence Interval of the Difference").

The results of the T-test for all variables showed that only **7 of the 41 are significantly associated with gender**.

T-Test6

Group Statistics

	Sex	N	Mean	Std. Deviation	Std. Error Mean
6. I consider that I am able to find on the Internet educational material for people with special educational needs.	Male	90	3.93	1.130	.119
	Female	120	4.35	.479	.044

Figure 61 : *T-Test analysis based on the gender finding on the Internet educational material for students with special educational needs.*

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
6. I consider that I am able to find on the Internet educational material for students with special educational needs.	Equal variances assumed	48.193	.000	-3.631	208	.000	-.417	.115	-.643	-.190
	Equal variances not assumed			-3.284	113.075	.001	-.417	.127	-.668	-.165

Figure 62 : *T-Test analysis based on the gender of whether the participants consider themselves capable of locating educational material for students with special educational needs on the Internet.*

The test of the means with the criterion t for independent samples showed that the question of whether the participants consider themselves capable of locating educational material for students with special educational needs on the **Internet is significantly related to gender.** In particular, women (M = 4.35, SD = 0.48) are more likely to find online educational materials for students with special educational needs than men (M = 3.93, SD = 1,130), t (113.07) = -3.29, p = 0.001.

T-Test36

Group Statistics

	Sex	N	Mean	Std. Deviation	Std. Error Mean
36. I know what website accessibility testing is.	Male	90	3.40	1.089	.115
	Female	120	2.60	1.246	.114

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Low	Upper
36. I know what website accessibility testing is.	Equal variances assumed	8.152	.005	4.855	208	.000	.800	.165	.475	1.125
	Equal variances not assumed			4.950	203.112	,000	,800	.162	.481	1.119

Figure 63 : *T-Test analysis whether the participants know what is the accessibility tests for websites.*

The control of the means with the criterion t for independent samples showed that in the question whether the participants know what is the accessibility tests for websites **is significantly related to gender.** In particular, men (M = 3.40, SD = 1.09) know more about what accessibility tests for websites than women (M = 2.60, SD = 1.25), t (203.11) = 4.95, p = 0.00001.

T-Test37

Group Statistics

	Sex	N	Mean	Std. Deviation	Std. Error Mean
37. I am familiar with the general WAI / W3C guidelines for website accessibility.	Male	90	3.20	1.114	.117
	Female	120	2.50	1.290	.118

Figure 64 : *T-Test analysis based on the gender whether the participants are familiar with the general WAI / W3C guidelines for website accessibility.*

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
37. I am familiar with the general WAI / W3C guidelines for website accessibility.	Equal variances assumed	10.146	.002	4.123	208	.000	.700	.170	.365	1.035
	Equal variances not assumed			4.210	203.847	.000	.700	.166	.372	1.028

Figure 65 : *T-Test analysis whether the participants are familiar with the general WAI / W3C guidelines for website accessibility.*

The control of the means with the criterion t for independent samples showed that the question whether the participants are familiar with the general WAI / W3C guidelines for the accessibility of the websites **is significantly related to gender**. In particular, men (M = 3.20, SD = 1.11) are more familiar with the general WAI / W3C guidelines for website accessibility than women (M = 2.50, SD = 1, 29), t (203.85) = 4.21, p = 0.00001.

T-Test38

Group Statistics

	Sex	N	Mean	Std. Deviation	Std. Error Mean
38. I am able to create websites with high accessibility parameters.	Male	90	3.20	1.114	.117
	Female	120	2.20	1.213	.111

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
38. I am able to create websites with high accessibility parameters.	Equal variances assumed.	.911	.341	6.120	208	.000	1.000	.163	.678	1.322
	Equal variances not assumed.			6.196	199.652	.000	1.000	.161	.682	1.318

Figure 66 : *T-Test analysis based on the gender whether the participants feel able to create websites with high accessibility parameters.*

The control of the means with the criterion t for independent samples showed that the question of whether the participants are able to create websites with high accessibility parameters **is significantly related to gender**. In particular, men (M = 3.20, SD = 1.11) are more familiar with creating websites with high accessibility parameters than women (M = 2.20, SD = 1.21), t (208) = 6.12, p = 0.00001.

T-Test39

Group Statistics

	Sex	N	Mean	Std. Deviation	Std. Error Mean
39. I am able to adapt a computer, including peripherals, to the educational needs of every student.	Male	90	3.40	1.149	.121
	Female	120	2.65	1.465	.134

Figure 67 : *T-Test analysis based on the gender whether participants feel to adapt a computer, including peripherals, to the educational needs of every student.*

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
39. I am able to adapt a computer, including peripherals, to the educational needs of every student.	Equal variances assumed	21.208	.000	4.017	208	.000	.750	.187	.382	1.118
	Equal variances not assumed			4.156	207.550	.000	.750	.180	.394	1.106

Figure 68 : *T-Test analysis based whether participants are able to adapt a computer, including peripherals, to the educational needs of every student.*

The control of the means by the criterion t for independent samples showed that the question of whether the participants are able to adapt a computer, including peripherals, to the educational needs of all **is significantly related to gender.** In particular, men (M = 3.40, SD = 1.15) can more easily adapt a computer, including peripherals, to the educational needs of every student than women (M = 2.65, SD = 1.46), t (207.55) = 4.16, p = 0.00001.

T-Test40

Group Statistics

	Sex	N	Mean	Std. Deviation	Std. Error Mean
40. I know various institutions related to the study and research of the accessibility of websites.	Male	90	3.33	1.254	.132
	Female	120	2.40	1.325	.121

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
40. I know various institutions related to the study and research of the accessibility of websites.	Equal variances assumed	3.342	.069	5.169	208	.000	.933	.181	.577	1.289
	Equal variances not assumed			5.209	197.055	.000	.933	.179	.580	1.287

Figure 69 : *T-Test analysis based on the gender whether participants know various institutions related to the study and research of the accessibility of websites.*

The control of the means by the criterion t for independent samples showed that the question of whether the participants know different institutions related to the study and research of the accessibility of the websites **is significantly related to gender.** In particular, men (M = 3.33, SD = 1.25) know more about the various institutions related to the study and research of website accessibility than women (M = 2.40, SD = 1,32), t (208) = 5.17, p = 0.00001.

T-Test41

Group Statistics

	Sex	N	Mean	Std. Deviation	Std. Error Mean
41. I am able to mention various accessibility tests.	Male	90	3.13	1.210	.128
	Female	120	2.65	1.499	.137

Figure 70 : *T-Test analysis based on the gender whether participants are able to mention various accessibility test.*

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
41. I am able to mention various accessibility tests.	Equal variances assumed	10.759	.001	2.507	208	.013	.483	.193	.103	.863
	Equal variances not assumed			2.584	206.826	.010	.483	.187	.115	.852

Figure 71 : *T-Test analysis whether participants feel to mention various accessibility tests.*

The control of the means by the criterion t for independent samples showed that the question of whether the participants are able to report different accessibility tests **is significantly related to gender**. In particular, men (M = 3.13, SD = 1.21) are able to report various accessibility tests from women (M = 2.65, SD = 1.50), t (206.83) = 2.58, p = 0.01.

The other variables for which the control of the means with the criterion t for independent samples showed that they are not significantly related to gender are the following: general knowledge about the possibilities offered by ICT to students with special educational needs (p = 0.58> 0.05), I know about the difficulties created by different types of disabilities regarding the use of ICT (p = 0.54> 0.05), I know the way in which specific ICT tools are chosen based on physical, sensory and cognitive characteristics of every student (p = 0.56> 0.05), I know ICT training practices for students with different types of disabilities (p = 0.68> 0.05), I know mobile-supported applications of modern technology phones and concern educational practices in special

education (p = 0.15> 0.05), I feel ready to help a student with special educational needs to benefit from the use of ICT (p = 0.83> 0 , 05), I know how to design activities with educational software for students with special educational needs (p = 0.39> 0.05), I am able to explain the possibilities offered by a braille typewriter for students with visual impairments and cognitive disabilities (p = 0.10 > 0.05), I know the possibilities offered by screen readers for the visually impaired and cognitively disabled (p = 0.16> 0.05), I know different types of equipment connected to the computer and used by students with visual impairments and cognitive disabilities (p = 0.09> 0.05), I know various screen magnification software such as JAWS, used by students with visual impairments and cognitive disabilities (p = 0.052> 0.05), I can design teaching materials in Word Editor, eliminating the aspects that make it difficult for students with visual impairments and cognitive disabilities (p = 0.21> 0.05), I know specific browsers for students with vision problems and cognitive disabilities (p = 0.48> 0.05), I know websites with educational material for students with vision problems and cognitive disabilities (p = 0.60> 0.05 am able to apply teaching strategies and program adaptations studies supported by ICT to facilitate the inclusion of students with vision problems and cognitive disabilities. (p = 0.60> 0.05), I know the possibilities that ICT offers to students with visual impairments and cognitive disabilities (p = 0.53> 0.05), I know the sign language (p = 0.34> 0.05),

I know various computer training programs used to enhance oral and written speech (p = 0.09> 0.05), I know various websites with educational material for students with hearing problems and cognitive disabilities (p = 0.38> 0, 05), I am able to apply teaching strategies based on ICT tools to facilitate the integration of students with hearing problems (p = 0.14> 0.05), I know the possibilities offered by ICT to students with hearing problems and cognitive disabilities (p = 0.74> 0.05), I know different speech retraining programs (p = 0.10> 0.05), I know different types of keyboards for students with mobility problems (p = 0.09> 0.05), I know computer software that controls the computer with voice command (p = 0.43> 0.05), I know educational material for students with mobility problems and cognitive disabilities (p = 0.54> 0.05), I am able to apply ICT-based teaching strategies to facilitate the integration of students with mobility problems and cognitive disabilities (p = 0.80> 0.05), I know the possibilities that offer ICT to students with mobility problems and cognitive disabilities (p = 0.62> 0.05), I know educational programs used to support cognitive skills (p = 0.73> 0.05), I know various websites with educational material for students with

cognitive disabilities (p = 1.00> 0.05), I am able to apply teaching strategies using ICT tools to facilitate the integration of students with cognitive disabilities (p = 0.15> 0.05) I am able to make adjustments to the curricula supported by ICT tools and address to students with cognitive disabilities (p = 0.16> 0.05), I know various websites with educational material for students with cognitive disabilities (p = 0.09> 0.05), I know the possibilities offered by ICT tools to students with cognitive disabilities (p = 0.90> 0.05), I know the possibilities offered by operating systems - more accessible to students with cognitive disabilities (p = 0.55> 0.05).

3.3. Correlation of Numerical Cross Variables (CORRELATION)

This command (correlation) calculates the correlation between numeric cross-variables using the Pearson r correlation index type as the default. The level of statistical significance of the indicator and the sample size are also given.

Thus, it should first be checked the relevance of the numerical variables, which in our case are the independent variables of the research. In the following Correlations table, Pearson correlation indices r between the independent variables were calculated. All indicators **were positive** and **statistically significant** (p <0.001). The size of the indicators ranged from 0.35 ("Years of Teaching Experience in Special Education" X "Type of Employment" to 0.79 "Years of Teaching Experience in Special Education" X "Years of Teaching Experience").

Correlations

		Age	Years of Teaching Experience in Special Education	Years of Teaching Experience	Type of Employment
Age	Pearson Correlation	1	.616**	.766**	.500**
	Sig. (2-tailed)		.000	.000	.000
	N	210	210	210	210
Years of Teaching Experience in Special Education	Pearson Correlation	.616**	1	.790**	.355**
	Sig. (2-tailed)	.000		.000	.000
	N	210	210	210	210
Years of Teaching Experience	Pearson Correlation	.766**	.790**	1	.442**
	Sig. (2-tailed)	.000	.000		.000
	N	210	210	210	210
Type of Employment	Pearson Correlation	.500**	.355**	.442**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	210	210	210	210

**. Correlation is significant at the 0.01 level (2-tailed).

Figure 72 : *Correlation Analysis.*

3.4. Statistical Forecast (REGRESSION)

Multiple regression analysis is used to statistically predict the values of a dependent variable criterion by one or more independent prediction variables. It is an extension of the simple bi-variable correlation index since it calculates the multi-correlation index, i.e. the degree of correlation between the dependent variable and several independent variables at the same time. In contrast to the correlation calculation, however, the use of regression analysis implies a causal relationship between the dependent variable and the independent ones. The higher the correlation of each independent variable with the dependent one and the smaller the correlation of the independent variables with each other, the higher the prediction accuracy of the dependent variable.

Analysis of Variance (ANOVA) is one of the results performed with the statistical forecast (regression) and is used to check the statistical significance of the differences of the average terms of more than two groups. In addition, ANOVA can control the interaction of two or more independent (categorical) variables on the dependent (numerical) variable.

Multiple regression analysis (enter method) was used to test the ability to predict the level of general knowledge about the possibilities offered by ICT to students with special educational needs by the characteristics of Educators. The following were used as predictor variables: Age, Years of Teaching Experience in Special Education, Years of Teaching Experience and Type of Employment. The multi-correlation index is equal to 0.44 and the adjusted coefficient of determination R^2 is equal to 0.18. That is, 18% of the spread of the level of general knowledge about the possibilities offered by ICT to students with special educational needs can be interpreted by the influence of independent variables. The slope of the regression **line is significantly different from zero**, $F(4, 205) = 12.25$, $p < 0.001$.

From the review of the regression coefficients it was found that three (out of four) independent variables contribute significantly to the prediction of the dependent: the "Age" (b = -0,60, t = -5,91, p <0,001) the "Years of Teaching" Experience "(b = 0.79, t = 6.23, p <0.001) and the" Years of Teaching Experience in Special Education" (b = -0.18, t = -2.43, p <0.05). That is, the younger the age and the greater the teaching experience, the higher the level of general knowledge about the possibilities that ICT offers to students with special educational needs (see Figure 73).

Prediction variables	*B*	SE *B*	beta
Age	-0.33	0.07	-0.60***
Type of Employment	0.02	0.07	0.02
Years of Teaching Experience	0.44	0.07	0.79***
Years of Teaching Experience in Special Education	-0.18	0.07	-0.25*

Note. p <0.5. *** p <0.001. Dependent variable: level of general knowledge about the possibilities offered by ICT to students with special educational needs (enter method). R^2 = 0.18, F (4. 205) = 12.25, p <0.001.

Figure 73 : *Regression analysis for the statistical prediction of the level of general knowledge about the possibilities offered by ICT to students with special educational needs from the characteristics of the Educators (N = 209).*

Multiple regression analysis (enter method) was used to test the predictability of whether participants are aware of the difficulties created by different types of disabilities regarding the use of ICT, by the characteristics of the Educators. As predictor variables were used: Age, Years of Teaching Experience in Special Education, Years of Teaching Experience and Type of Employment. The multiple affinity index is equal to 0.48 and the adjusted coefficient of determination R^2 is equal to 0.21. That is, 21% of the dispersion of whether they are aware of the difficulties created by different types of disabilities regarding the use of ICT, can be explained by the influence of independent variables. The slope of the regression line **is significantly different from zero**, F (4, 205) = 15.28, p <0.001. From the review of the regression coefficients it was found that **two** (out of four) independent variables **contribute significantly** to the prediction of the dependent: the "Age" (b = -0,45, t = -7,54, p <0,001) and the "Years of Teaching Experience"(b = 0.35, t = 5.62, p <0.001). That is, the younger the age and the older the teaching experience, the more they know about the difficulties created by different types of disabilities regarding the use of ICT (see Figure 74).

Prediction variables	*B*	SE *B*	beta
Age	-0.45	0.06	-0.75***
Type of Employment	0.07	0.06	0.08
Years of Teaching Experience	0.35	0.06	0.69***
Years of Teaching Experience in Special Education	-0.05	0.07	-0.07

Note. *** p <0.001. Dependent variable: knowledge of the difficulties created by different types of disabilities regarding the use of ICT (enter method). R^2 = 0.21, F (4, 205) = 15.28, p <0.001.

Figure 74 : *Regression analysis for the statistical prediction of knowledge about the difficulties created by different types of disabilities related to the use of ICT, by the characteristics of the Educators (N = 209).*

Multiple regression analysis (enter method) was used to test the predictability of whether they know how to select specific ICT tools based on the physical, sensory and cognitive characteristics of different individuals, from the characteristics of Educators. The following were used as predictor variables: Age, Years of Teaching Experience in Special Education, Years of Teaching Experience and Type of Employment. The multiple affinity index is equal to 0.39 and the adjusted coefficient of determination R^2 is equal to 0.14. That is, 14% of the dispersion of whether they know how they choose specific ICT tools based on the physical, sensory and cognitive characteristics of different individuals, can be explained by the influence of independent variables. The slope of the regression line is **significantly different from zero**, F (4, 205) = 9.37, p <0.001. From the review of the regression coefficients it was found that **two** (out of four) independent variables **contribute significantly** to the prediction of the dependent: the "Age" (b = -0.41, t = -6.00, p <0.001) and the "Years of Teaching Experience" (b = 0.29, t = 4.02, p <0.001). That is, the younger the age and the greater the teaching experience, the better they know how to select specific ICT tools based on the physical, sensory and cognitive characteristics of different individuals (see Figure 75).

Prediction variables	*B*	SE *B*	beta
Age	-0.41	0.07	-0.62***
Type of Employment	0.07	0.07	0.07
Years of Teaching Experience	0.29	0.07	0.52***
Years of Teaching Experience in Special Education	-0.01	0.08	-0.02

Note. *** p <0.001. Dependent variable: knowledge of the difficulties created by different types of disabilities regarding the use of ICT (enter method). R^2 = 0.14, F (4, 205) = 9.38, p <0.001.

Figure 75 : *Regression analysis for the statistical prediction of the knowledge of the way in which specific ICT tools are selected based on the physical, sensory and cognitive characteristics of every student, from the characteristics of the Educators (N = 209).*

Multiple regression analysis (enter method) was used to test the ability to predict whether participants know ICT training practices for students with different types of disabilities, from the characteristics of the Educators. The following were used as predictor variables: Age, Years of Teaching Experience in Special Education, Years of Teaching Experience and Type of Employment. The multi-correlation index is equal to 0.51 and the adjusted coefficient of determination R^2 is equal to 0.24. That is, 24% of the dispersion of whether participants are aware of ICT training practices for students with different types of disabilities, can be explained by the influence of independent variables. The slope of the regression line **is significantly different from zero**, F (4, 205) = 17.90, p <0.001. From the review of the regression coefficients it was found that **two** (of the four) independent variables **contribute significantly** to the prediction of the dependent: the "Age" (b = -0.47, t = -7.90, p <0.001) and the "Years of Teaching Experience" (b = 0.35, t = 5.73, p <0.001). That is, the younger the age and the older

the teaching experience, the better they know about ICT training practices for students with different types of disabilities (see Figure 76).

Prediction variables	*B*	SE *B*	beta
Age	-0.47	0.06	-0.77***
Type of Employment	-.025	.065	-.027
Years of Teaching Experience	.355	.062	.691***
Years of Teaching Experience in Special Education	-.075	.067	-.110

Note. *** p <0.001. Dependent variable: knowledge of ICT training practices for students with different types of disabilities (enter method). R^2 = 0.24, F (4, 205) = 17.90, p <0.001.

Figure 76 : *Regression analysis for the statistical prediction of the knowledge of educational practices of ICT application for students with different types of disabilities (N = 209).*

Multiple regression analysis (enter method) was used to test the predictability of whether Educators know applications supported by modern phones and training practices in special education, by the characteristics of the Educators. The following were used as predictor variables: Age, Years of Teaching Experience in Special Education, Years of Teaching Experience and Type of Employment. The multiple affinity index is equal to 0.322 and the adjusted coefficient of determination R^2 is equal to 0.09. That is, 9% of the dispersion of whether they know applications supported by modern technology mobile phones and relate to educational practices in special education, can be explained by the influence of independent variables. The slope of the regression line **is significantly different from zero**, F (4, 205) = 5.93, p <0.001. From the review of the regression coefficients it was found that **three** (out of the four) independent **variables contribute significantly** to the prediction of the dependent: the "Age" (b = -0.30, t = -3.71, p <0,001) the "Years of Teaching Experience" (b = 0,39, t = 4,58, p <0,001) and the "Years of Teaching Experience in Special Education" (b = -0.21, t = -2.33, p <0.05) .

That is, the younger the age and the older the teaching experience, the better they know applications that are supported by modern technology mobile phones and relate to educational practices in special education. (see Figure 77).

Prediction variables	*B*	SE *B*	beta
Age	-0.30	0.08	-0.40***
Type of Employment	-0.03	0.09	-0.02
Years of Teaching Experience	0.38	0.08	0.61***
Years of Teaching Experience in Special Education	-0.21	0.09	-0.25*

Note. * p <0.05. *** p <0.001. Dependent variable knowledge of applications supported by modern technology mobile phones and related to educational practices in special education. (enter method). R^2 = 0.09, F (4, 205) = 5.93, p <0.001.

Figure 77 : *Regression analysis for the statistical prediction of knowledge of applications supported by modern technology mobile phones and related to educational practices in special education. (N = 209).*

Multiple regression analysis (enter method) was used to test the predictability of Educators being able to locate online educational materials for students with special educational needs, based on the characteristics of the Educators. The following were used as predictor variables: age, Years of Teaching Experience in Special Education, Years of Teaching Experience and Type of Employment. The multi-correlation index is equal to 0.58 and the adjusted coefficient of determination R^2 is equal to 0.33. That is, 33% of the dispersion of Educators' abilities to find educational material for students with special educational needs on the Internet can be explained by the influence of independent variables. The slope of the regression line **is significantly different from zero**, F (4, 205) = 26.64, p <0.001. From the review of the regression coefficients it was found that **two** (out of four) independent variables **contribute significantly** to the prediction of the dependent: the "Age" (b = -0.49, t = -9.88, p <0.001) and the "Years of Teaching Experience" (b = 0.35, t = 6.70, p <0.001). That is, the younger the age and the greater the teaching experience, the better able they are to find educational material for students with special educational needs on the Internet (see Figure 78).

Prediction variables	*B*	SE *B*	beta
Age	-0.49	0.05	-0.91***
Type of Employment	0.02	0.05	0.03
Years of Teaching Experience	0.35	0.05	0.76***
Years of Teaching Experience in Special Education	-0.08	0.06	-0.13

Note. *** p <0.001. Dependent variable: ability to locate online educational materials on Internet for students with special educational needs. R^2 = 0.33, F (4, 205) = 26.64, p <0.001.

Figure 78 : *Regression analysis for the statistical prediction of the ability of educators to locate on the Internet educational material for students with special educational needs (N = 209).*

Multiple regression analysis (enter method) was used to test the ability to predict whether participants feel ready to help the student with special educational needs in order to benefit from the use of ICT, by the characteristics of the Educators. The following were used as predictor variables: Age, Years of Teaching Experience in Special Education, Years of Teaching Experience and Type of Employment. The multiple affinity index is equal to 0.43 and the adjusted coefficient of determination R^2 is equal to 0.17. That is, 17% of the dispersion of whether they know how they choose specific ICT tools based on the physical, sensory and cognitive characteristics of different individuals, can be explained by the influence of independent variables. The slope of the regression line **is significantly different from zero**, F (4, 205) = 11.97, p <0.001. From the review of the regression coefficients it was found that **two** (out of four) independent variables **contribute significantly** to the prediction of the dependent: the "Age" (b= -0.42, t = -6.30, p <0.001) and the "Years of Teaching Experience" (b = 0.36, t = 5.13, p <0.001). That is, the younger the age and the greater the teaching experience, the more they feel ready to support the student with special educational needs to benefit from the use of ICT (see Figure 79).

Prediction variables	*B*	SE *B*	beta
Age	-0.42	0.07	-0.64***
Type of Employment	-0.04	0.07	-0.04
Years of Teaching Experience	0.36	0.07	0.65***
Years of Teaching Experience in Special Education	-0.05	0.07	-0.07

Note. *** p <0.001. Dependent variable: readiness of Educators to support the student with special educational needs to benefit from the use of ICT (enter method). R^2 = 0.17, F (4, 205) = 11.97, p <0.001.

Figure 79 : *Regression analysis for the statistical prediction of the readiness of Educators to support the student with special educational needs in order to benefit from the use of ICT, from their characteristics (N = 209).*

Multiple regression analysis (enter method) was used to test the predictability of whether Educators know how to design activities with educational software for students with special educational needs, from the characteristics of the instructors. The following were used as predictor variables: Age, Years of Teaching Experience in Special Education, Years of Teaching Experience and Type of Employment. The multiple affinity index is equal to 0.43 and the adjusted coefficient of determination R^2 is equal to 0.17. That is, 17% of the dispersion of whether they know how they choose specific ICT tools based on the physical, sensory and cognitive characteristics of different individuals, can be explained by the influence of independent variables. The slope of the regression line **is significantly different from zero**, F (4, 205) = 11.41, p <0.001. From the review of the regression coefficients it was found that **two** (out of four) independent variables **contribute significantly** to the prediction of the dependent: the "Age" (b = -0.39, t = -5.45, p <0.001) and the "Years of Teaching Experience" (b = 0.46, t = 6.09, p <0.001). That is, the younger the age and the greater the teaching experience, the better teachers know how to plan activities with educational software for students with special educational needs (see Figure 80).

Prediction variables	*B*	SE *B*	beta
Age	-0.39	0.07	-0.56***
Type of Employment	0.30	0.08	0.03
Years of Teaching Experience	0.46	0.07	0.77***
Years of Teaching Experience in Special Education	-0.16	0.08	-0.20

Note. *** p <0.001. Dependent variable: planning activities with educational software for students with special educational needs (enter method). $R^2 = 0.17$, F (4, 205) = 11.41, p <0.001.

Figure 80 : *Regression analysis for the statistical prediction of the knowledge of the way in which the Educators plan activities with educational software for students with special educational needs, from the characteristics of the Educators (N = 209).*

Multiple regression analysis (enter method) was used to test the predictability of whether participants are able to explain the possibilities offered by a braille typewriter for students with visual impairments and cognitive disabilities, from the characteristics of educators. The following were used as predictor variables: Age, Years of Teaching Experience in Special Education, Years of Teaching Experience and Type of Employment. The multiple affinity index is equal to 0.48 and the adjusted coefficient of determination R^2 is equal to 0.22. That is, 22% of the dispersion of whether they know how they choose specific ICT tools based on the physical, sensory and cognitive characteristics of different individuals, can be explained by the influence of independent variables. The slope of the regression line **is significantly different from zero**, F (4, 205) = 15.55, p <0.001. From the review of the regression coefficients it was found that **three** (of the four) independent variables **contribute significantly** to the prediction of the dependent: the "Age" (b = -0,361, t = -5,30, p <0,001) the "Years of Teaching Experience" (b = 0.29, t = 4.16, p <0.001) and the "Years of Teaching Experience in Special Education" (b = - 0.35, t = -4.66, p <0.001). That is, the younger the age and the greater the teaching experience in special education, the more they can cope with explaining the possibilities offered by a braille typewriter for students with vision problems and cognitive disabilities (see Figure 81).

Prediction variables	*B*	SE *B*	beta
Age	-0.36	0.07	-0.53***
Type of Employment	0.13	0.07	0.12
Years of Teaching Experience	0.29	0.07	0.51***
Years of Teaching Experience in Special Education	-0.35	0.08	-0.46***

Note. *** p <0.001. Dependent variable: explanation of possibilities offered by a braille typewriter for students with visual impairments and cognitive disabilities (enter method). R^2 = 0.22, F (4, 205) = 15.54, p <0.001.

Figure 81 : *Regression analysis for statistical prediction to explain the possibilities offered by a braille typewriter for students with visual impairments and cognitive disabilities, from the characteristics of the instructors (N = 209).*

Multiple regression analysis (enter method) was used to test the predictability of whether participants know the possibilities offered by screen readers for the visually impaired and cognitively disabled, by the characteristics of Educators. The following were used as predictor variables: Age, Years of Teaching Experience in Special Education, Years of Teaching Experience and Type of Employment. The multiple affinity index is equal to 0.45 and the adjusted coefficient of determination R^2 is equal to 0.19. That is, 19% of the dispersion of whether they know how they choose specific ICT tools based on the physical, sensory and cognitive characteristics of different individuals, can be explained by the influence of independent variables. The slope of the regression line is **significantly different from zero**, F (4, 205) = 12.95, p <0.001. From the review of the regression coefficients it was found that **three** (out of four) independent variables **contribute significan**tly to the prediction of the dependent: the "Age" (b = -0.38, t = -4.77, p <0.001) the "Years of Teaching Experience" (b = 0.41, t = 4.89, p <0.001) and the" Years of Teaching Experience in Special Education "(b = -0.45, t = -4.99, p <0.001).

That is, the younger the age and the greater the teaching experience in special education, the better they know the possibilities offered by screen readers for students with visual impairments and cognitive disabilities (see Figure 82).

Prediction variables	*B*	SE *B*	beta
Age	-0.38	0.08	-0.48***
Type of Employment	0.14	0.09	0.12
Years of of Teaching Experience	0.41	0.08	0.61***
Years of Teaching Experience in Special Education	-0.45	0.09	-0.51***

Note. *** p <0.001. Dependent variable: knowledge of the possibilities offered by screen readers for the visually impaired and cognitive disabilities (enter method). R^2 = 0.19, F (4, 205) = 12.95, p <0.001.

Figure 82 : *Regression analysis for the statistical prediction of the knowledge of the possibilities offered by the screen reading programs for visually impaired and cognitively disabled, by the characteristics of the Educators (N = 209).*

Multiple regression analysis (enter method) was used to test the predictability of whether participants know different types of equipment connected to the computer and used by students with visual impairments and cognitive disabilities, by the characteristics of Educators. The following were used as predictor variables: Age, Years of Teaching Experience in Special Education, Years of Teaching Experience and Type of Employment. The multi-correlation index is equal to 0.35 and the adjusted coefficient of determination R^2 is equal to 0.11. That is, 11% of the spread of whether they know how they choose specific ICT tools based on the physical, sensory and cognitive characteristics of every student, can be explained by the influence of independent variables. The slope of the regression line **is significantly different from zero**, F (4, 205) = 7.37, p <0.001. From the review of the regression coefficients it was found that **three** (out of four) independent variables **contribute significantly** to the prediction of the dependent: the "Age" (b = -0.29, t = -3.59, p <0.001) the "Years of Teaching Experience"(b = 0.36, t = 4.20, p <0.001)) and the "Years of Teaching Experience in Special Education" (b = - 0.36, t = -3.87, p <0.001). That is, the younger the age and the greater the teaching experience in special education, the better they

know the different types of equipment connected to the computer and used by students with vision problems and cognitive disabilities (see Figure 83).

Prediction variables	*B*	SE *B*	beta
Age	-0.29	0.08	-0.38***
Type of Employment	0.05	0.09	0.04
Years of Teaching Experience	0.36	0.09	0.55***
Years of Teaching Experience in Special Education	-0.36	0.09	-0.41***

Note. *** p <0.001. Dependent variable: knowledge of different types of equipment connected to the computer and used by students with visual impairments and cognitive disabilities (enter method). $R^2 = 0.11$, F (4, 205) = 7.37, p <0.001.

Figure 83 : *Regression analysis for the statistical prediction of knowledge of different types of equipment connected to the computer and used by students with visual impairments and cognitive disabilities, by the characteristics of the Educators (N = 209).*

Multiple regression analysis (enter method) was used to test the ability to predict whether participants know various screen magnification software such as JAWS, used by visually impaired and cognitively disabled students, by Educators characteristics. The following were used as predictor variables: Age, Years of Teaching Experience in Special Education, Years of Teaching Experience and Type of Employment. The multiple affinity index is equal to 0.32 and the adjusted coefficient of determination R^2 is equal to 0.08. That is, 8% of the dispersion of whether they know how they choose specific ICT tools based on the physical, sensory and cognitive characteristics of different individuals, can be explained by the influence of independent variables. The slope of the regression line **is significantly different from zero**, F (4, 205) = 5.86, p <0.001. From the review of the regression coefficients it was found that **three** (out of the four) independent variables **contribute significantly** to the prediction of the dependent: the "Age" (b = -0.28, t = -3.13, p <0.001) the "Years of Teaching Experience" (b = 0.35, t = 3.77, p <0.001) and the "Years of Teaching Experience in Special Education" (b = -0.35, t = -3.48, p <0.01) . That is, the younger the age and the greater the teaching experience and special education, the better they know various

screen magnification software such as JAWS, used by students with visual impairments (see Figure 84).

Prediction variables	*B*	SE *B*	beta
Age	-0.28	0.09	-0.34***
Type of Employment	0.02	0.10	0.02
Years of Teaching Experience	0.35	0.09	0.50***
Years of Teaching Experience in Special Education	-0.35	0.10	-0.38**

Note. . ** p <0.01 *** p <0.001. Dependent variable: knowledge of various screen magnification software such as JAWS, used by students with visual impairments and cognitive disabilities (enter method). $R^2 = 0.08$, F (4, 205) = 5.86, p <0.001.

Figure 84 : *Regression analysis for the statistical prediction of the knowledge of various screen magnification software such as JAWS, used by students with visual impairments, by the characteristics of the Educators (N = 209).*

Multiple regression analysis (enter method) was used to test the predictability of whether participants could design teaching material in Word Editor, eliminating aspects of visual impairment and cognitive impairment from Educators' characteristics. The following were used as predictor variables: Age, Years of Teaching Experience in Special Education, Years of Teaching Experience and Type of Employment. The multiple affinity index is equal to 0.41 and the adjusted coefficient of determination R^2 is equal to 0.15. That is, 15% of the extent to which they know how they choose specific ICT tools based on the physical, sensory and cognitive characteristics of different individuals, can be explained by the influence of independent variables. The slope of the regression line is **significantly different from zero**, F (4, 205) = 10.33, p <0.001. From the review of the regression coefficients it was found that **three** (out of four) independent variables **contribute significantly** to the prediction of the dependent: the "Age" (b = -0.29, t = -3.83, p <0.001) the "Years of Teaching Experience" (b = 0.22, t = 2.77, p <0.01) and the "Years of Teaching Experience in Special Education" (b = -0.22, t = -2.65, p <0, 01). That is, the younger the age and the greater the teaching experience in special education, the better they can design teaching material in Word

Editor, eliminating the aspects that make it difficult for students with visual impairments (see Figure 85).

Prediction variables	*B*	SE *B*	beta
Age	-0.29	0.07	-0.40***
Type of Employment	-0.13	0.08	-0.11
Years of Teaching Experience	0.22	0.08	0.35**
Years of Teaching Experience in Special Education	-0.22	0.08	-0.28**

Note. ** p <0.01 *** p <0.001. Dependent variable: ability to design teaching material in Word Editor, eliminating aspects that are difficult for students with visual impairments and cognitive disabilities (enter method). R^2 = 0.15, F (4, 205) = 10.33, p <0.001.

Figure 85 : *Regression analysis for statistical prediction of whether participants can design teaching material in Word Editor, eliminating the aspects that make it difficult for students with visual impairments, from the characteristics of Educators (N = 209).*

Multiple regression analysis (enter method) was used to test the possibility of predicting whether Educators know specific browsers for the visually impaired and cognitively disabled, from the characteristics of the Educators. The following were used as predictor variables: Age, Years of Teaching Experience in Special Education, Years of Teaching Experience and Type of Employment. The multiple affinity index is equal to 0.31 and the adjusted coefficient of determination R^2 is equal to 0.08. That is, 8% of the spread of whether participants know how they choose specific ICT tools based on the physical, sensory and cognitive characteristics of different individuals, can be explained by the influence of independent variables. The slope of the regression line **is significantly different from zero**, F (4, 205) = 5.55, p <0.001. From the review of the regression coefficients it was found find that **two** (out of four) independent variables **contribute significantly** to the prediction of the dependent: the "Age" (b = -0.26, t = -3.32, p <0.01) the "Years of Teaching Experience" (b = 0.17, t = 2.07, p <0.05) and the "Years of Teaching Experience in Special Education" (b = -0.20, t = -2.27, p < 0.05). That is, the younger the age and the greater the teaching experience in special education,

the better they know specific browsers for students with visual impairments and cognitive disabilities (see Figure 86).

Prediction variables	*B*	SE *B*	beta
Age	-0.26	0.08	-0.36**
Type of Employment	0.85	0.09	0.08
Years of Teaching Experience	0.17	0.08	0.28*
Years of Teaching Experience in Special Education	-0.20	0.09	-0.25*

Note. * p <0.5 ** p <0.01. Dependent variable: knowledge of specific browsers for students with visual impairments and cognitive disabilities (enter method). R^2 = 0.08, F (4, 205) = 5.55, p <0.001.

Figure 86 : *Regression analysis for the statistical prediction of the knowledge of specific browsing programs for students with visual impairments and cognitive disabilities, from the characteristics of the Educators (N = 209).*

Multiple regression analysis (enter method) was used to test the ability to predict whether participants know websites with educational material for the visually impaired and cognitively disabled, from the characteristics of Educators. The following were used as predictor variables: Age, Years of Teaching Experience in Special Education, Years of Teaching Experience and Type of Employment. The multi-correlation index is equal to 0.51 and the adjusted coefficient of determination R^2 is equal to 0.25. That is, 25% of the extent to which participants know how they choose specific ICT tools based on the physical, sensory and cognitive characteristics of different individuals, can be explained by the influence of independent variables. The slope of the regression line is **significantly different from zero**, F (4, 205) = 18.18, p <0.001. From the review of the regression coefficients it was found that **three** (out of four) independent variables **contribute significantly** to the prediction of the dependent: the "Age" (b = -0.35, t = -5.15, p <0.001) the "Years of Teaching Experience" (b = 0.26, t = 3.73, p <0.001) and the "Years of Teaching Experience in Special Education" (b = -0.37, t = -4.82, p <0.001). That is, the younger the age and the greater the teaching experience in special education, the better they know websites with educational material for students with visual impairments and cognitive disabilities (see Figure 87).

Prediction variables	*B*	SE *B*	beta
Age	-0.35	0.07	-0.50***
Type of Employment	0.07	0.07	0.07
Years of Teaching Experience	0.26	0.07	0.45***
Years of Teaching Experience in Special Education	-0.37	0.08	-0.47***

Note. *** p <0.001. Dependent variable: knowledge of websites with educational material for students with visual impairments and cognitive disabilities (enter method). R^2 = 0.25, F (4, 205) = 18.18, p <0.001.

Figure 87 : *Regression analysis for the statistical prediction of knowledge of websites with educational material for students with visual impairments and cognitive disabilities, from the characteristics of the Educators (N = 209).*

Multiple regression analysis (enter method) was used to test the predictability of participants being able to apply teaching strategies and adaptations to ICT-supported curricula to facilitate the inclusion of students with visual impairments and cognitive disabilities, from the characteristics of Educators. The following were used as predictor variables: Age, Years of Teaching Experience in Special Education, Years of Teaching Experience and Type of Employment. The multi-correlation index is equal to 0.45 and the adjusted coefficient of determination R^2 is equal to 0.18. That is, 18% of the extent to which participants know how they choose specific ICT tools based on the physical, sensory and cognitive characteristics of different individuals, can be explained by the influence of independent variables. The slope of the regression line **is significantly different from zero**, F (4, 205) = 12.72, p <0.001. From the review of the regression coefficients it was found that **three** (out of the four) independent variables contribute significantly to the prediction of the dependent: the "Age" (b = -0.34, t = -4.75, p <0.001), the "Years of Teaching Experience" (b = 0.18, t = 2.36, p <0.05) and the "Years of Teaching Experience in Special Education" (b = -0.25, t = -3.06, p <0.01).

That is, the younger the age and the greater the teaching experience in special education, the more able they are to apply teaching strategies and adaptations to ICT-supported curricula to facilitate the inclusion of students with visual impairments and cognitive disabilities (see Figure 88).

Prediction variables	*B*	SE *B*	beta
Age	-0.34	0.07	-0.48***
Type of Employment	0.13	0.08	0.12
Years of Teaching Experience	0.18	0.07	0.30*
Years of Teaching Experience in Special Education	-0.25	0.08	-0.31**

Note. * p <0.05, ** p <01, *** p <0.001. Dependent variable: whether participants are able to apply teaching strategies and adaptations to ICT-supported curricula to facilitate the inclusion of students with visual impairments and cognitive disabilities (enter method). R^2 = 0.18, F (4, 205) = 12.72, p <0.001.

Figure 88 : *Regression analysis for statistical prediction of whether participants are able to apply teaching strategies and adaptations to ICT-supported curricula to facilitate the inclusion of students with visual impairments and cognitive disabilities, by the characteristics of Educators (N = 209).*

Multiple regression analysis (enter method) was used to test the ability to predict whether participants know the possibilities offered by ICT to students with visual impairments and cognitive disabilities, from the characteristics of Educators. The following were used as predictor variables: Age, Years of Teaching Experience in Special Education, Years of Teaching Experience and Type of Employment. The multiple affinity index is equal to 0.52 and the adjusted coefficient of determination R^2 is equal to 0.25. That is, 25% of the extent to which they know how participants choose specific ICT tools based on the physical, sensory and cognitive characteristics of different individuals, can be explained by the influence of independent variables. The slope of the regression line **is significantly different from zero**, F (4, 205) = 18.82, p <0.001. From the review of the regression coefficients it was found that **three** (out of the four) independent variables contribute significantly to the prediction of the dependent: the "Age" (b = -0.31, t = -4.66, p <0.001) the "Years of Teaching Experience" (b = 0.30, t = 4.24, p <0.001) and the "Years of Teaching Experience in Special Education" (b = -0.42, t = -5.48, p <0.001). That is, the younger the age and the greater the teaching experience in special education, the more they know about the possibilities that ICT offers to students with vision problems and cognitive disabilities (see Figure 89).

Prediction variables	*B*	SE *B*	beta
Age	-0.31	0.07	-0.45***
Type of Employment	-0.01	0.07	-0.01
Years of Teaching Experience	0.30	0.07	0.51***
Years of Teaching Experience in Special Education	-0.42	0.08	-0.53***

Note. *** p <0.001. Dependent variable: knowledge of the possibilities offered by ICT to students with vision problems and cognitive disabilities (enter method). R^2 = 0.25, F (4, 205) = 18.82, p <0.001.

Figure 89 *: Regression analysis for the statistical prediction of the knowledge of the possibilities that ICT offers to students with vision problems and cognitive disabilities, from the characteristics of the Educators (N = 209).*

Multiple regression analysis (enter method) was used to test the ability to predict whether participants know sign language, from the characteristics of Educators. The following were used as predictor variables: Age, Years of Teaching Experience in Special Education, Years of Teaching Experience and Type of Employment. The multiple affinity index is equal to 0.44 and the adjusted coefficient of determination R^2 is equal to 0.17. That is, 17% of the dispersion of whether they know how participants choose specific ICT tools based on the physical, sensory and cognitive characteristics of different individuals, can be explained by the influence of independent variables. The slope of the regression line is **significantly different from zero**, F (4, 205) = 12.11, p <0.001. From the review of the regression coefficients it was found that all **four** independent variables **contribute significantly** to the prediction of the dependent: the "Age" (b = -0.53, t = -4.67, p <0.001) the "Type of Employment" (b = 0.35, t = 2.80, p <0.01) the "Years of Teaching Experience" (b = 0.69, t = 5.76, p <0.001) and the "Years of Teaching Experience in Special Education" (b = -0.60, t = -4.68, p <0.001). That is, the younger the age and the greater the teaching experience in special education and especially full-time Educators under public law contract, the better they know the sign language (see Figure 90).

Prediction variables	*B*	SE *B*	beta
Age	-0.53	0.11	-0.47***
Type of Employment	0.35	0.12	0.20**
Years of Teaching Experience	0.69	0.12	0.73***
Years of Teaching Experience in Special Education	-0.60	0.13	-0.48***

Note. ** p <0.01, *** p <0.001. Dependent variable: knowledge of sign language (enter method). R^2 = 0.17, F (4, 205) = 12.11, p <0.001.

Figure 90 : *Regression analysis for the statistical prediction of sign language knowledge, by the characteristics of educators (N = 209).*

Multiple regression analysis (enter method) was used to test the ability to predict whether participants know various computer training programs used to enhance oral and written speech, from the characteristics of Educators. The following were used as predictor variables: Age, Years of Teaching Experience in Special Education, Years of Teaching Experience and Type of Employment. The multiple affinity index is equal to 0.68 and the adjusted coefficient of determination R^2 is equal to 0.45. That is, 45% of the dispersion of whether participants know how they choose specific ICT tools based on the physical, sensory and cognitive characteristics of different individuals, can be explained by the influence of independent variables. The slope of the regression line **is significantly different from zero**, F (4, 205) = 44.41, p <0.001. From the review of the regression coefficients it was found that all **four** independent variables **contribute significantly** to the prediction of the dependent: the "Age" (b = -0.48, t = -6.98, p <0.001) the "Type of Employment" (b = 0.48, t = 6.39, p <0.001) the "Years of Teaching Experience" (b = 0.60, t = 8.35, p <0.001) and the "Years of Teaching Experience in Special Education" (b = -0.79, t = -10.11, p <0.001). That is, the younger the age and the greater the teaching experience in special education and especially full-time Educators under public law, the more they know about the various computer training programs used to enhance oral and written speech (see Figure 91).

Prediction variables	*B*	SE *B*	beta
Age	-0.48	0.07	-0.58***
Type of Employment	0.48	0.08	0.38***
Years of Teaching Experience	0.60	0.07	0.86***
Years of Teaching Experience in Special Education	-0.79	0.08	-0.84***

Note. *** p <0.001. Dependent variable: knowledge of various computer training programs used to enhance oral and written speech (enter method). R^2 = 0.14, F (4, 205) = 9.38, p <0.001.

Figure 91 *: Regression analysis for the statistical prediction of knowledge of various computer training programs used to enhance oral and written speech, by the characteristics of Educators (N = 209).*

Multiple regression analysis (enter method) was used to test the ability to predict whether participants know different websites with educational material for students with hearing problems and cognitive disabilities, from the characteristics of the Educators. The following were used as predictor variables: Age, Years of Teaching Experience in Special Education, Years of Teaching Experience and Type of Employment. The multi-correlation index is equal to 0.56 and the adjusted coefficient of determination R^2 is equal to 0.30. That is, 30% of the spread of whether they know how they choose specific ICT tools based on the physical, sensory and cognitive characteristics of different individuals, can be explained by the influence of independent variables. The slope of the regression line **is significantly different from zero**, F (4, 205) = 23.06, p <0.001. From the review of the regression coefficients it was found that all **four** independent variables **contribute significantly** to the prediction of the dependent: the "Age" (b = -0.44, t = -5.85, p <0.001) the "Type of Employment" (b = 0.18, t = 2.13, p <0.05) the "Years of Teaching Experience" (b = 0.51, t = 6.43, p <0.001) and the "Years of Teaching Experience in Special Education" (b = -0.61, t = -7.08, p <0.001). That is, the younger the age and the greater the teaching experience in special education and especially full-time Educators under public law contract, the better they know various websites with educational material for students with hearing problems (see Figure 92).

Prediction variables	*B*	SE *B*	beta
Age	-0.44	0.08	-0.55***
Type of Employment	0.18	0.08	0.14*
Years of Teaching Experience	0.51	0.08	0.75***
Years of Teaching Experience in Special Education	-0.61	0.09	-0.67***

Note. * p <0.5. *** p <0.001. Dependent variable: knowledge of various websites with educational material for students with hearing problems and cognitive disabilities (enter method). R^2 = 0.30, F (4, 205) = 23.06, p <0.001.

Figure 92 : *Regression analysis for the statistical prediction of the knowledge of the various websites with educational material for students with hearing problems and cognitive disabilities, from the characteristics of the Educators (N = 209).*

Multiple regression analysis (enter method) was used to test the predictability of whether participants are able to apply ICT-based teaching strategies to facilitate the integration of students with hearing and cognitive disabilities, from the characteristics of the Educators. The following were used as predictor variables: Age, Years of Teaching Experience in Special Education, Years of Teaching Experience and the Type of Employment. The multiple affinity index is equal to 0.65 and the adjusted coefficient of determination R^2 is equal to 0.42. That is, 42% of the dispersion of whether participants know how they choose specific ICT tools based on the physical, sensory and cognitive characteristics of different individuals, can be explained by the influence of independent variables. The slope of the regression line **is significantly different from zero**, F (4, 205) = 38.40, p <0.001. From the review of the regression coefficients it was found that all **four** independent variables **contribute significantly** to the prediction of the dependent: the "Age" (b = -0,54, t = -7.16, p <0.001) the "Type of Employment" (b = 0.35, t = 4.21, p <0.001) the "Years of Teaching Experience" (b = 0.60, t = 7.66, p <0.001) and the "Years of Teaching Experience in Special Education" (b = -0.78, t = -9.17, p <0.001). That is, the younger the age and the greater the teaching experience in special education and in particular full-time Educators under public law, the more they are able to implement ICT-based teaching strategies to facilitate the

integration of students with disabilities. hearing problems and cognitive disabilities (see Figure 93).

Prediction variables	*B*	SE *B*	beta
Age	-0.54	0.07	-0.61***
Type of Employment	0.35	0.08	0.26***
Years of Teaching Experience	0.60	0.08	0.81***
Years of Teaching Experience in Special Education	-0.78	0.08	-0.79***

Note. *** p <0.001. Dependent variable: ability to apply teaching strategies based on ICT tools to facilitate the integration of students with hearing problems and cognitive disabilities (enter method). R^2 = 0.42, F (4, 205) = 38.40, p <0.001.

Figure 93 : *Regression analysis for the statistical prediction of whether participants are able to implement teaching strategies based on ICT tools to facilitate the integration of students with hearing and cognitive disabilities, sensory and cognitive characteristics of different individuals, from the characteristics of Educators (N = 209).*

Multiple regression analysis (enter method) was used to test the ability to predict whether participants know the possibilities offered by ICT to students with hearing problems and cognitive disabilities, from the characteristics of Educators. The following were used as predictor variables: Age, Years of Teaching Experience in Special Education, Years of Teaching Experience and Type of Employment. The multiple affinity index is equal to 0.61 and the adjusted coefficient of determination R^2 is equal to 0.36. That is, 36% of the dispersion of whether participants know how they choose specific ICT tools based on the physical, sensory and cognitive characteristics of different individuals, can be explained by the influence of independent variables. The slope of the regression line **is significantly different from zero**, F (4, 205) = 29.98, p <0.001. From the review of the regression coefficients it was found that **three** (out of four) independent variables **contribute significantly** to the prediction of the dependent: the "Age" (b = -0.36, t = -4.45, p <0.001) the "Years of Teaching Experience" (b = 0.58, t = 6.79, p <0.001) and the "Years of Teaching Experience in Special Education" (b = -0.86, t = -9.34, p <0.001). That is, the younger the age and the greater the teaching experience in special education, the better they know the possibilities that ICT offers to students with hearing problems and cognitive disabilities (see Figure 94).

Prediction variable	*B*	SE *B*	beta
Age	-0.36	0.08	-0.40***
Type of Employment	0.12	0.09	0.08
Years of Teaching Experience	0.58	0.08	0.76***
Years of Teaching Experience in Special Education	-0.86	0.09	-0.85***

Note. *** p <0.001. Dependent variable: the possibilities offered by ICT to students with hearing problems and cognitive disabilities (enter method). R^2 = 0.36, F (4, 205) = 29.98, p <0.001.

Figure 94 : *Regression analysis for the statistical prediction of the knowledge of the possibilities offered by ICT to students with hearing problems and cognitive disabilities, sensory and cognitive characteristics of different individuals, from the characteristics of Educators (N = 209).*

Multiple regression analysis (enter method) was used to test the predictability of whether participants know different speech retraining programs from Educators characteristics. The following were used as predictor variables: Age, Years of Teaching Experience in Special Education, Years of Teaching Experience and Type of Employment. The multi-correlation index is equal to 0.52 and the adjusted coefficient of determination R^2 is equal to 0.26. That is, 26% of the dispersion of whether participants know how they choose specific ICT tools based on the physical, sensory and cognitive characteristics of different individuals, can be explained by the influence of independent variables. The slope of the regression **line is significantly different from zero**, F (4, 205) = 19.42, p <0.001. From the review of the regression coefficients it was found that all **four** independent variables **contribute significantly** to the prediction of the dependent: the "Age" (b = -0.40, t = -4.97, p <0.001) the "Type of Employment" (b = 0.23, t = 2.60, p <0.05) the "Years of Teaching Experience" (b = 0.61, t = 7.14, p <0.001) and the "Years of Teaching Experience in Special Education" (b = -0.64, t = -7.04, p <0.001). That is, the younger the age and the greater the teaching experience in special education and especially full-time public contract Educators, the more different speech retraining programs they know (see Figure 95).

Prediction variable	*B*	SE *B*	beta
Age	-0.40	0.08	-0.48***
Type of Employment	0.23	0.09	0.18*
Years of Teaching Experience	0.61	0.08	0.85***
Years of Teaching Experience in Special Education	-0.64	0.09	-0.68***

Note. * p <0.5. *** p <0.001. Dependent variable: knowledge of different speech retraining programs (enter method). R^2 = 0.26, F (4, 205) = 19.42, p <0.001.

Figure 95 : *Regression analysis for the statistical prediction of the knowledge of different speech retraining programs, by the characteristics of the Educators (N = 209).*

Multiple regression analysis (enter method) was used to test the ability to predict whether participants know different types of keyboards for students with mobility problems, from the characteristics of Educators. The following were used as predictor variables: Age, Years of Teaching Experience in Special Education, Years of Teaching Experience and Type of Employment. The multi-correlation index is equal to 0.50 and the adjusted coefficient of determination R^2 is equal to 0.24. That is, 24% of the dispersion of whether participants know how they choose specific ICT tools based on the physical, sensory and cognitive characteristics of different individuals, can be explained by the influence of independent variables. The slope of the regression line **is significantly different from zero**, F (4, 205) = 17.48, p <0.001. From the review of the regression coefficients it was found that **three** (out of the four) independent variables **contribute significantly** to the prediction of the dependent: the "Age" (b = -0.44, t = -7.69, p <0.001) the "Years of Teaching Experience" (b = 0.33, t = 5.55, p <0.001) and the "Years of Teaching Experience in Special Education" (b = -0.16, t = -2.55, p <0.05) . That is, the younger the age and the greater the teaching experience in special education, the more different types of keyboards for students with mobility problems know (see Figure 96).

Prediction variable	*B*	SE *B*	beta
Age	-0.44	0.06	-0.75***
Type of Employment	0.06	0.06	0.65
Years of Teaching Experience	0.33	0.06	0.67***
Years of Teaching Experience in Special Education	-0.16	0.06	-0.25*

Note. * p <0.5. *** p <0.001. Dependent variable: knowledge of the different types of keyboards for students with mobility problems (enter method). R^2 = 0.24, F (4, 205) = 17.48, p <0.001.

Figure 96 : *Regression analysis for the statistical prediction of the knowledge of the different types of keyboards for students with mobility problems, from the characteristics of the Educators (N = 209).*

Multiple regression analysis (enter method) was used to test the ability to predict whether participants know computer software that controls the computer by voice command, from the characteristics of Educators. The following were used as predictor variables: Age, Years of Teaching Experience in Special Education, Years of Teaching Experience and Type of Employment. The multiple affinity index is equal to 0.47 and the adjusted coefficient of determination R^2 is equal to 0.20. That is, 20% of the dispersion of whether participants know how they choose specific ICT tools based on the physical, sensory and cognitive characteristics of different individuals, can be explained by the influence of independent variables. The slope of the regression line is **significantly different from zero**, F (4, 205) = 14.37, p <0.001. From the review of the regression coefficients it was found that three (out of four) independent variables **contribute significantly** to the prediction of the dependent: the "Age" (b = -0.37, t = -5.03, p <0.001) the "Years of Teaching Experience" (b = 0.53, t = 6.80, p <0.001) and the "Years of Teaching Experience in Special Education" (b = -0.46, t = -5.41, p <0.001). That is, the younger the age and the greater the teaching experience in special education, the better they know computer software that controls the computer with voice command (see Figure 97).

Prediction variable	*B*	SE *B*	beta
Age	-0.37	0.07	-0.50***
Type of Employment	0.03	0.08	0.03
Years of Teaching Experience	0.53	0.08	0.84***
Years of Teaching Experience in Special Education	-0.46	0.08	-0.54***

Note. *** p <0.001. Dependent variable: knowledge of computer software that controls the computer by voice command (enter method). R^2 = 0.20, F (4, 205) = 14.37, p <0.001.

Figure 97 *: Regression analysis for the statistical prediction of computer software knowledge that controls the computer with voice command, by the characteristics of Educators (N = 209).*

Multiple regression analysis (enter method) was used to test the ability to predict whether participants know educational material for students with mobility problems, from the characteristics of Educators. The following were used as predictor variables: Age, Years of Teaching Experience in Special Education, Years of Teaching Experience and Type of Employment. The multi-correlation index is equal to 0.58 and the adjusted coefficient of determination R^2 is equal to 0.32. That is, 32% of the spread of whether participants know how they choose specific ICT tools based on the physical, sensory and cognitive characteristics of different individuals, can be explained by the influence of independent variables. The slope of the regression line **is significantly different from zero**, F (4, 205) = 25.87, p <0.001. From the review of the regression coefficients it was found that **three** (out of the four) independent variables **contribute significantly** to the prediction of the dependent: the "Age" (b = -0.49, t = -8.48, p <0.001) the "Teaching Years Experience" (b = 0.54, t = 8.95, p <0.001) and the "Years of Teaching Experience in Special Education" (b = -0.32, t = -4.90, p <0.001).

That is, the younger the age and the greater the teaching experience in special education, the better they know educational material for students with mobility problems (see Figure 98).

Prediction variable	*B*	SE *B*	beta
Age	-0.49	0.06	-0.78***
Type of Employment	0.04	0.06	0.04
Years of Teaching Experience	0.54	0.06	1.02***
Years of Teaching Experience in Special Education	-0.32	0.06	-0.46***

Note. *** p <0.001. Dependent variable: knowledge of educational material for students with mobility problems and cognitive disabilities (enter method). R^2 = 0.32, F (4, 205) = 25.87, p <0.001.

Figure 98 : *Regression analysis for the statistical prediction of knowledge of educational material for students with mobility problems, sensory and cognitive characteristics of different individuals, from the characteristics of Educators (N = 209).*

Multiple regression analysis (enter method) was used to test the predictability of whether participants are able to apply ICT-based teaching strategies to facilitate the integration of students with mobility problems and cognitive disabilities, from the characteristics of Educators. The following were used as predictor variables: Age, Years of Teaching Experience in Special Education, Years of Teaching Experience and Type of Employment. The multi-correlation index is equal to 0.57 and the adjusted coefficient of determination R^2 is equal to 0.31. That is, 31% of the dispersion of whether they know how they choose specific ICT tools based on the physical, sensory and cognitive characteristics of different individuals, can be explained by the influence of independent variables. The slope of the regression line is **significantly different from zero**, F (4, 205) = 24.94, p <0.001. From the review of the regression coefficients it was found that **three** (out of four) independent variables **contribute significantly** to the prediction of the dependent: the "Age" (b = -0.48, t = -8.81, p <0.001) the "Years of Teaching Experience" (b = 0.40, t = 7.09, p <0.001) and the "Years of Teaching Experience in Special Education" (b = -0.24, t = -3.97, p <0.001). That is, the younger the age and the greater the teaching experience and special education, the greater their ability to apply ICT-based teaching strategies to facilitate the integration of students with mobility problems and cognitive disabilities (see Figure 99).

Prediction variable	*B*	SE *B*	beta
Age	-0.48	0.05	-0.82***
Type of Employment	0.05	0.06	0.06
Years of Teaching Experience	0.40	0.06	0.81***
Years of Teaching Experience in Special Education	-0.24	0.06	-0.37***

Note. *** p <0.001. Dependent variable: ability to apply ICT-based teaching strategies to facilitate the integration of students with mobility problems and cognitive disabilities (enter method). R^2 = 0.31, F (4, 205) = 24.94, p <0.001.

Figure 99 : *Regression analysis for the statistical prediction of the ability to apply ICT-based teaching strategies to facilitate the integration of students with mobility problems and cognitive disabilities, from the characteristics of Educators (N = 209).*

Multiple regression analysis (enter method) was used to test the ability to predict whether participants know the possibilities offered by ICT to students with mobility problems and cognitive disabilities, from the characteristics of Educators. The following were used as predictor variables: Age, Years of Teaching Experience in Special Education, Years of Teaching Experience and Type of Employment. The multi-correlation index is equal to 0.51 and the adjusted coefficient of determination R^2 is equal to 0.24. That is, 24% of the dispersion of whether participants know how they choose specific ICT tools based on the physical, sensory and cognitive characteristics of different individuals, can be explained by the influence of independent variables. The slope of the regression line **is significantly different from zero**, F (4, 205) = 17.87, p <0.001. From the review of the regression coefficients it was found that **three** (out of the four) independent variables **contribute significantly** to the prediction of the dependent: the "Age" (b = -0.44, t = -7.40, p <0.001) the "Years of Teaching Experience" (b = 0.37, t = 5.89, p <0.001) and the "Years of Teaching Experience in Special Education" (b = -0.25, t = -3.63, p <0.001). That is, the younger the age and the greater the teaching experience in special education, the better they know the possibilities that ICT offers to students with mobility problems and cognitive disabilities (see Figure 100).

Prediction variable	*B*	SE *B*	beta
Age	-0.44	0.06	-0.72***
Type of Employment	0.10	0.07	0.10
Years of Teaching Experience	0.37	0.06	0.71***
Years of Teaching Experience in Special Education	-0.25	0.07	-0.36***

Note. *** p <0.001. Dependent variable: knowledge of the possibilities offered by ICT to students with mobility problems and cognitive disabilities (enter method). R^2 = 0.24, F (4, 205) = 17.87, p <0.001.

Figure 100 : *Regression analysis for the statistical prediction of the knowledge of the possibilities offered by ICT to students with mobility problems and cognitive disabilities, from the characteristics of the Educators (N = 209).*

Multiple regression analysis (enter method) was used to test the ability to predict whether participants know educational programs used to support cognitive skills, by the characteristics of Educators. The following were used as predictor variables: Age, Years of Teaching Experience in Special Education, Years of Teaching Experience and Type of Employment. The multiple affinity index is equal to 0.37 and the adjusted coefficient of determination R^2 is equal to 0.12. That is, 12% of the spread of whether participants know how they choose specific ICT tools based on the physical, sensory and cognitive characteristics of different individuals, can be explained by the influence of independent variables. The slope of the regression line **is significantly different from zero**, F (4, 205) = 8.10, p <0.001. From the review of the regression coefficients it was found that **two** (out of four) independent variables **contribute significantly** to the prediction of the dependent: the "Age" (b = -0.31, t = -4.61, p <0.001) the "Years of Teaching Experience" (b = 0.32, t = 4.53, p <0.001) and the "Years of Teaching Experience in Special Education" (b = -0.25, t = -3.23, p <0.001). That is, the younger the age and the greater the teaching experience in special education, the better they know educational programs used to support cognitive skills (see Figure 101).

Prediction variable	*B*	SE *B*	beta
Age	-0.31	0.07	-0.48***
Type of Employment	0.10	0.07	0.10
Years of Teaching Experience	0.32	0.07	0.59***
Years of Teaching Experience in Special Education	-0.25	0.08	-0.34***

Note. *** p <0.001. Dependent variable: knowledge of educational programs used to support cognitive skills (enter method). R^2 = 0.12, F (4, 205) = 8.10, p <0.001.

Figure 101 : *Regression analysis for the statistical prediction of the knowledge of the educational programs used to support cognitive skills, by the characteristics of the Educators (N = 209).*

Multiple regression analysis (enter method) was used to test the ability to predict whether participants know different websites with educational material for students with cognitive disabilities, from the characteristics of Educators. The following were used as predictor variables: Age, Years of Teaching Experience in Special Education, Years of Teaching Experience and Type of Employment. The multi-correlation index is equal to 0.54 and the adjusted coefficient of determination R^2 is equal to 0.28. That is, 28% of the dispersion of whether participants know how they choose specific ICT tools based on the physical, sensory and cognitive characteristics of different individuals, can be explained by the influence of independent variables. The slope of the regression line **is significantly different from zero**, F (4, 205) = 21.00, p <0.001. From the review of the regression coefficients it was found that **two** (out of the four) independent variables **contribute significantly** to the prediction of the dependent: the "Age" (b = -0.42, t = -7.69, p <0.001) the "Years of Teaching Experience" (b = 0.43, t = 7.63, p <0.001) and the "Years of Teaching Experience in Special Education" (b = -0.28, t = -4.61, p <0.001). That is, the younger the age and the greater the teaching experience in special education, the better they know various websites with educational material for students with cognitive disabilities (see Figure 102).

Prediction variable	*B*	SE *B*	beta
Age	-0.42	0.05	-0.73***
Type of Employment	0.05	0.06	0.06
Years of Teaching Experience	0.43	0.06	0.90***
Years of Teaching Experience in Special Education	-0.28	0.06	-0.44***

Note. *** p <0.001. Dependent variable: knowledge of various websites with educational material for students with cognitive disabilities (enter method). R^2 = 0.28, F (4, 205) = 21.00, p <0.001.

Figure 102 : *Regression analysis for the statistical prediction of knowledge of various websites with educational material for students with cognitive disabilities, from the characteristics of Educators (N = 209).*

Multiple regression analysis (enter method) was used to test the ability to predict whether participants are able to implement teaching strategies using ICT tools to facilitate the integration of students with cognitive disabilities, from the characteristics of Educators. The following were used as predictor variables: Age, Years of Teaching Experience in Special Education, Years of Teaching Experience and Type of Employment. The multi-correlation index is equal to 0.52 and the adjusted coefficient of determination R^2 is equal to 0.26. That is, 26% of the dispersion of whether participants know how they choose specific ICT tools based on the physical, sensory and cognitive characteristics of different individuals, can be explained by the influence of independent variables. The slope of the regression line **is significantly different from zero**, F (4, 205) = 19.07, p <0.001. From the review of the regression coefficients it was found that **three** (out of the four) independent variables **contribute significantly** to the prediction of the dependent: the "Age" (b = -0.42, t = -6.42, p <0.001) the "Years of Teaching Experience" (b = 0.45, t = 6.49, p <0.001) and the "Years of Teaching Experience in Special Education" (b = -0.38, t = -5.13, p <0.001). That is, the younger the age and the greater the teaching experience in special education, the more able they are to implement teaching strategies using ICT tools to facilitate the integration of students with cognitive disabilities (see Figure 103).

Prediction variable	*B*	SE *B*	beta
Age	-0.42	0.07	-0.62***
Type of Employment	0.01	0.07	0.01
Years of Teaching Experience	0.45	0.07	0.78***
Years of Teaching Experience in Special Education	-0.38	0.07	-0.50***

Note. *** p <0.001. Dependent variable: ability to apply teaching strategies using ICT tools to facilitate the integration of students with cognitive disabilities (enter method). R_2 = 0.26, F (4, 205) = 19.07, p <0.001.

Figure 103 : *Regression analysis for statistical prediction of the ability to apply teaching strategies using ICT tools to facilitate the integration of students with cognitive disabilities, from the characteristics of Educators (N = 209).*

Multiple regression analysis (enter method) was used to test the ability to predict the ability of participants to make adjustments to curricula supported by ICT tools and addressed to students with cognitive disabilities, by the characteristics of Educators. The following were used as predictor variables: Age, Years of Teaching Experience in Special Education, Years of Teaching Experience and Type of Employment. The multi-correlation index is equal to 0.58 and the adjusted coefficient of determination R^2 is equal to 0.32. That is, 32% of the spread of whether participants know how they choose specific ICT tools based on the physical, sensory and cognitive characteristics of different individuals, can be explained by the influence of independent variables. The slope of the regression line **is significantly different from zero**, F (4, 205) = 26.10, p <0.001. From the review of the regression coefficients it was found that all **four** independent variables **contribute significantly** to the prediction of the dependent: the "Age" (b = -0.48, t = -7.94, p <0.001) the "Type of employment" (b = -0.15, t = -2.20, p <0.05) the "Years of Teaching Experience" (b = 0.48, t = 7.49, p <0.001) and the "Years of Teaching Experience in Special Treatment" (b = -0.28, t = -4.08, p <0.001). That is, the younger the age and the greater the teaching and special education experience, especially full-time contractors under private law, the greater their ability to make adjustments to the curricula supported by ICT tools and aimed at students with cognitive disabilities (see Figure 104).

Prediction variable	*B*	SE *B*	beta
Age	-0.48	0.06	-0.73***
Type of Employment	-0.15	0.07	-0.14*
Years of Teaching Experience	0.48	0.06	0.85***
Years of Teaching Experience in Special Education	-0.28	0.07	-0.38***

Note. * p <0.05. *** p <0.001. Dependent variable: ability to make adjustments to curricula supported by ICT tools and aimed at students with cognitive disabilities (enter method). R^2 = 0.32, F (4, 205) = 26.10, p <0.001.

Figure 104 : *Regression analysis for the statistical prediction of the ability to make adjustments to the curricula supported by the ICT tools and addressed to students with cognitive disabilities, by the characteristics of the Educators (N = 209).*

Multiple regression analysis (enter method) was used to test the ability to predict whether participants know different websites with educational material for students with cognitive disabilities, from the characteristics of Educators. The following were used as predictor variables: Age, Years of Teaching Experience in Special Education, Years of Teaching Experience and Type of Employment. The multi-correlation index is equal to 0.59 and the adjusted coefficient of determination R^2 is equal to 0.34. That is, 34% of the dispersion of whether participants know how they choose specific ICT tools based on the physical, sensory and cognitive characteristics of different individuals, can be explained by the influence of independent variables. The slope of the regression line **is significantly different from zero**, F (4, 205) = 28.08, p <0.001. From the review of the regression coefficients it was found that **three** (out of four) independent variables **contribute significantly** to the prediction of the dependent: the "Age" (b = -0.47, t = -9.55, p <0.001) the "Years of Teaching Experience" (b = 0.38, t = 7.37, p <0.001) and the "Years of Teaching Experience in Special Education" (b = -0.22, t = -3.94, p <0.001). That is, the younger the age and the greater the teaching experience in special education, the better various websites with educational material for students with cognitive disabilities (see Figure 105).

Prediction variable	*B*	SE *B*	beta
Age	-0.47	0.05	-0.87***
Type of Employment	0.80	0.05	0.96
Years of Teaching Experience	0.38	0.05	0.83***
Years of Teaching Experience in Special Education	-0.22	0.06	-0.36***

Note. *** p <0.001. Dependent variable: knowledge of various websites with educational material for students with cognitive disabilities (enter method). R^2 = 0.34, F (4, 205) = 28.08, p <0.001.

Figure 105 : *Regression analysis for the statistical prediction of knowledge of various websites with educational material for students with cognitive disabilities, from the characteristics of Educators (N = 209).*

Multiple regression analysis (enter method) was used to test the ability to predict whether participants know the possibilities offered by ICT tools to students with cognitive disabilities, from the characteristics of Educators. The following were used as predictor variables: Age, Years of Teaching Experience in Special Education, Years of Teaching Experience and Type of Employment. The multi-correlation index is equal to 0.56 and the adjusted coefficient of determination R^2 is equal to 0.30. That is, 30% of the spread of whether participants know how they choose specific ICT tools based on the physical, sensory and cognitive characteristics of different individuals, can be explained by the influence of independent variables. The slope of the regression line **is significantly different from zero**, F (4, 205) = 23.26, p <0.001. From the review of the regression coefficients it was found that **three** (out of the four) independent variables **contribute significantly** to the prediction of the dependent: the "Age" (b = -0.50, t = -8.36, p <0.001) the "Years of Teaching Experience" (b = 0.44, t = 6.92, p <0.001) and the "Years of Teaching Experience in Special Education" (b = -0.29, t = -4.17, p <0.001). That is, the younger the age and the greater the teaching experience in special education, the better they know the possibilities offered by ICT tools to students with cognitive disabilities (see Figure 106).

Prediction variable	*B*	SE *B*	beta
Age	-0.50	0.06	-0.78***
Type of Employment	0.06	0.07	0.07
Years of Teaching Experience	0.44	0.06	0.80***
Years of Teaching Experience in Special Education	-0.29	0.07	-0.39***

Note. *** p <0.001. Dependent variable: knowledge of the possibilities offered by ICT tools to students with cognitive disabilities (enter method). R^2 = 0.30, F (4, 205) = 23.26, p <0.001.

Figure 106 : *Regression analysis for the statistical prediction of the knowledge of the possibilities offered by the ICT tools to students with cognitive disabilities, from the characteristics of the Educators (N = 209).*

Multiple regression analysis (enter method) was used to test the predictability of whether participants are aware of the capabilities of operating systems - more accessible to students with cognitive disabilities, om the characteristics of Educators. The following were used as predictor variables: Age, Years of Teaching Experience in Special Education, Years of Teaching Experience and Type of Employment. The multiple affinity index is equal to 0.45 and the adjusted coefficient of determination R^2 is equal to 0.18. That is, 18% of the extent to which participants know how they choose specific ICT tools based on the physical, sensory and cognitive characteristics of different individuals, can be explained by the influence of independent variables. The slope of the regression line **is significantly different from zero**, F (4, 205) = 12.77, p <0.001. From the review of the regression coefficients it was found that **three** (out of four) independent variables **contribute significantly** to the prediction of the dependent: the "Age" (b = -0.30, t = -3.88, p <0.001) the "Years of Teaching Experience" (b = 0.47, t = 5.69, p <0.001) and the "Years of Teaching Experience in Special Education" (b = -0.50, t = -5.69, p <0.001). That is, the younger the age and the greater the teaching experience in special education, the better they know the possibilities offered by the operating systems - more accessible to students with cognitive disabilities (see Figure 107).

Prediction variable	*B*	SE *B*	beta
Age	-0.30	0.08	-0.39***
Type of Employment	0.01	0.09	0.01
Years of Teaching Experience	0.47	0.08	0.71***
Years of Teaching Experience in Special Education	-0.50	0.09	-0.58***

Note. *** p <0.001. Dependent variable: knowledge of the possibilities offered by operating systems - more accessible to students with cognitive disabilities (enter method). R^2 = 0.18, F (4, 205) = 12.77, p <0.001.

Figure 107 : *Regression analysis for the statistical prediction of the knowledge of the possibilities offered by the operating systems - more accessible to students with cognitive disabilities, from the characteristics of the Educators (N = 209).*

Multiple regression analysis (enter method) was used to test the ability to predict whether participants know what website accessibility tests are, from the characteristics of the Educators. The following were used as predictor variables: Age, Years of Teaching Experience in Special Education, Years of Teaching Experience and Type of Employment. The multi-correlation index is equal to 0.40 and the adjusted coefficient of determination R^2 is equal to 0.15. That is, 15% of the dispersion of whether participants know how they choose specific ICT tools based on the physical, sensory and cognitive characteristics of different individuals, can be explained by the influence of independent variables. The slope of the regression line **is significantly different from zero**, F (4, 205) = 9.98, p <0.001. From the review of the regression coefficients it was found that **two** (out of four) independent variables **contribute significantly** to the prediction of the dependent: the "Years of Teaching Experience" (b = 0.27, t = 3.13, p <0.01) and the "Years of Teaching Experience in Special Education" (b = -0.51, t = -5.50, p <0.001). That is, the greater the teaching experience and in special education, the better they know what website accessibility tests are (see Figure 108).

Prediction variable	*B*	SE *B*	beta
Age	-0.40	0.08	-0.50
Type of Employment	-0.15	0.09	-0.13
Years of Teaching Experience	0.27	0.09	0.40**
Years of Teaching Experience in Special Education	-0.51	0.09	-0.57***

Note. ** p <0.01. *** p <0.001. Dependent variable: knowledge of what is accessibility testing for websites (enter method). R^2 = 0.15, F (4, 205) = 9.98, p <0.001.

Figure 108 : *Regression analysis for the statistical prediction of the knowledge of what are the accessibility tests for websites, from the characteristics of the Educators (N = 209).*

Multiple regression analysis (enter method) was used to test the predictability of participants' familiarity with the general WAI / W3C website accessibility guidelines, by Educators characteristics. The following were used as predictor variables: Age, Years of Teaching Experience in Special Education, Years of Teaching Experience and Type of Employment. The multiple affinity index is equal to 0.39 and the adjusted coefficient of determination R^2 is equal to 0.14. That is, 14% of the dispersion of whether participants know how they choose specific ICT tools based on the physical, sensory and cognitive characteristics of different individuals, can be explained by the influence of independent variables. The slope of the regression line **is significantly different from zero**, F (4, 205) = 9.43, p <0.001. From the review of the regression coefficients it was found that **two** (out of four) independent variables **contribute significantly** to the prediction of the dependent: the "Years of Teaching Experience" (b = 0.30, t = 3.40, p <0.01) and the "Years of Teaching Experience in Special Education" (b = -0.56, t = -5.92, p <0.001). That is, the greater the teaching experience and special education, the more familiar they are with the general WAI / W3C guidelines for website accessibility (see Figure 109).

Prediction variable	*B*	SE *B*	beta
Age	0.01	0.08	0.01
Type of Employment	-0.93	0.09	-0.07
Years of Teaching Experience	0.30	0.09	0.44**
Years of Teaching Experience in Special Education	-0.56	0.09	-0.62***

Note. ** p <0.01 *** p <0.001. Dependent variable: familiarity with the general WAI / W3C guidelines for accessibility of websites (enter method). R^2 = 0.14, F (4, 205) = 9.43, p <0.001.

Figure 109 : *Regression analysis for the statistical prediction of familiarity with the general WAI / W3C guidelines for the accessibility of websites, by the characteristics of the Educators (N = 209).*

Multiple regression analysis (enter method) was used to test the ability to predict whether participants have the ability to create web pages with high accessibility parameters, from the characteristics of Educators. The following were used as predictor variables: Age, Years of Teaching Experience in Special Education, Years of Teaching Experience and Type of Employment. The multi-correlation index is equal to 0.55 and the adjusted coefficient of determination R^2 is equal to 0.29. That is, 29% of the dispersion of whether participants know how they choose specific ICT tools based on the physical, sensory and cognitive characteristics of different individuals, can be explained by the influence of independent variables. The slope of the regression line **is significantly different from zero**, F (4, 205) = 21.90, p <0.001. From the review of the regression coefficients it was found that all **four** independent variables **contribute significantly** to the prediction of the dependent: the "Age" (b = 0.18, t = 2.40, p <0.05) the "Type of Employment" (b= -0.32, t = -3.84, p <0.001) the "Years of Teaching Experience" (b = 0.42, t = 5.23, p <0.001) and the "Years of Teaching Experience in Special Education" (b = -0.73, t = -8.42, p <0.001). That is, the older the age and the greater the teaching experience in special education, especially for full-time Educators under private law, the greater their ability to create websites with high accessibility parameters (see Figure 110).

Prediction variable	*B*	SE *B*	beta
Age	0.18	0.08	0.23*
Type of Employment	-0.32	0.08	-0.26***
Years of Teaching Experience	0.42	0.08	0.61***
Years of Teaching Experience in Special Education	-0.73	0.09	-0.80***

Note. * p <0.5. *** p <0.001. Dependent variable: ability to create web pages with high accessibility parameters (enter method). R^2 = 0.29, F (4, 205) = 21.90, p <0.001.

Figure 110 : *Regression analysis for the statistical prediction of the ability to create websites with high accessibility parameters, by the characteristics of Educators (N = 209).*

Multiple regression analysis (enter method) was used to test the ability to predict whether participants have the ability to adapt a computer, including peripherals, to the educational needs of all students with disabilities, by Educators characteristics. The following were used as predictor variables: Age, Years of Teaching Experience in Special Education, Years of Teaching Experience and Type of Employment. The multiple affinity index is equal to 0.43 and the adjusted coefficient of determination R^2 is equal to 0.17. That is, 17% of the dispersion of whether participants know how they choose specific ICT tools based on the physical, sensory and cognitive characteristics of different individuals, can be explained by the influence of independent variables. The slope of the regression line **is significantly different from zero**, F (4, 205) = 11.82, p <0.001. From the review of the regression coefficients it was found that **three** (out of four) independent variables **contribute significantly** to the prediction of the dependent: the "Type of employment" (b = -0.26, t = -2.60, p <0.05) the "Years of Teaching Experience" (b = 0.36, t = 3.86, p <0.001) and "Years of Teaching Experience in Special Education" (b = -0.61, t = -5.97, p <0.001). That is, the greater the teaching experience and special education, especially for full-time private law Educators, the greater their ability to adapt a computer, including peripherals, to the educational needs of all students with disabilities (see Figure 111).

Prediction variable	*B*	SE *B*	beta
Age	-0.03	0.09	-0.04
Type of Employment	-0.26	0.10	-0.19*
Years of Teaching Experience	0.36	0.09	0.49***
Years of Teaching Experience in Special Education	-0.61	0.10	-0.61***

Note. * p <0.05 *** p <0.001. Dependent variable: ability to adapt a computer, including peripherals, to the educational needs of all students with disabilities (enter method). R^2 = 0.17, F (4, 205) = 11.82, p <0.001.

Figure 111 : *Regression analysis for the statistical prediction of the ability to adapt a computer, including peripherals, to the educational needs of all students with disabilities, by the characteristics of Educators (N = 209).*

Multiple regression analysis (enter method) was used to test the predictability of whether participants know various institutions related to the study and research of website accessibility, by the characteristics of Educators. The following were used as predictor variables: Age, Years of Teaching Experience in Special Education, Years of Teaching Experience and Type of Employment. The multiple affinity index is equal to 0.55 and the adjusted coefficient of determination R^2 is equal to 0.28. That is, 28% of the dispersion of whether participants know how they choose specific ICT tools based on the physical, sensory and cognitive characteristics of different individuals, can be explained by the influence of independent variables. The slope of the regression line **is significantly different from zero**, F (4, 205) = 21.76, p <0.001. From the review of the regression coefficients it was found that **three** (out of the four) independent variables **contribute significantly** to the prediction of the dependent: the "Type of employment" (b = -0.19, t = -2.12, p <0.05) the "Years of Teaching Experience" (b = 0.51, t = 5.87, p <0.001) and the "Years of Teaching Experience in Special Education" (b = -0.85, t = -9.06, p < 0.001). That is, the greater the teaching experience in special education, especially full-time private law Educators, the better they know about the various institutions involved in the study and research of website accessibility (see Figure 112).

Prediction variable	*B*	SE *B*	beta
Age	0.01	0.08	0.11
Type of Employment	-0.19	0.09	-0.14*
Years of Teaching Experience	0.51	0.09	0.69***
Years of Teaching Experience in Special Education	-0.85	0.09	-0.86***

Note. * p <0.5. *** p <0.001. Dependent variable: knowledge of various institutions related to the study and research of website accessibility (enter method). R^2 = 0.28, F (4, 205) = 21.76, p <0.001.

Figure 112 : *Regression analysis for the statistical prediction of the knowledge of various institutions related to the study and research of the accessibility of websites, by the characteristics of the Educators (N = 209).*

Multiple regression analysis (enter method) was used to test the ability to predict participants' ability to report various accessibility tests, by Educators characteristics. The following were used as predictor variables: Age, Years of Teaching Experience in Special Education, Years of Teaching Experience and Type of Employment. The multiple affinity index is equal to 0.46 and the adjusted coefficient of determination R^2 is equal to 0.20. That is, 20% of the dispersion of whether participants know how they choose specific ICT tools based on the physical, sensory and cognitive characteristics of different individuals, can be explained by the influence of independent variables. The slope of the regression line **is significantly different from zero**, F (4, 205) = 13.92, p <0.001. From the review of the regression coefficients it was found that **two** (out of four) independent variables **contribute significantly** to the prediction of the dependent: the "Years of Teaching Experience" (b = 0.43, t = 4.60, p <0.001) and the "Years Teaching Experience in Special Education" (b = -0,74, t = -7,34, p <0,001). That is, the greater the teaching experience and in special education, the greater their ability to report various accessibility tests (see Figure 113).

Prediction variable	*B*	SE *B*	beta
Age	-0.50	0.09	-0.06
Type of Employment	0.12	0.10	0.09
Years of Teaching Experience	0.43	0.09	0.57***
Years of Teaching Experience in Special Education	-0.74	0.10	-0.74***

Note. *** p <0.001. Dependent variable: ability to report various accessibility tests (enter method). R^2 = 0.20, F (4, 205) = 13.92, p <0.001.

Figure 113 : *Regression analysis for the statistical prediction of the ability to report various accessibility tests, by the characteristics of the Educators (N = 209).*

3.5. Conclusion

In this chapter, it was presented the demographic characteristics of the sample as well as the results of the main part of the study. There was an elaborate presentation of the results using table graphics and description of each question for greater understanding.

Firstly, there was a **Descriptive** research in order to describe characteristics of the population of the study. After that, **Comparative Statistics**, **Correlation** of numerical cross variables and eventually a statistical forecast- **Regression Statistical** method was made for the estimation of relationships between dependent variables and one or more independent variables.

In summary, according to the above regression analysis, the independent variables that play the most important role are **age** and **years of teaching experience** in **regular** but also in **special education**, as for the type of employment little contribution to the results and only for full-time Educators with public or private contracts.

CHAPTER 4º

Overall Conclusions - Suggestions for Future Research

To begin with, regarding the demographic characteristic of the sample (N=210), the majority of the population is 31 to 35 years old, while the mean age of the participants was estimated from 36 to 45 (mean = 3.54) years and the standard deviation was estimated to be 1.58. Of the total participants, 120 (57.1%) are female and 90 (42.9%) are male. Concerning the specialty of the participants, the three most frequently appeared specialties seems to be Educators of Computers (22.9%) followed by Philologists (14.3%) and Mathematicians (11.4%). Regarding the composition of the sample in terms of educational level 85.7% (n = 180) had an additional degree (other degree, postgraduate or Phd). In particular, 54 individuals of the sample stated that they have a degree from another scientific field, almost all of them have attended a postgraduate diploma while only 12 hold a doctorate degree.

Regarding the question whether participants have received training in ICT, it seems that a vast majority (42.9%) are self-taught, while 20% and 22.9% have received a short-term and three-month/ six-month training in ICT respectively, and only the 14.3% have attended an annual training.

Another important conclusion is that 80% of the sample is a permanent staff in special education. Concerning the years of experience either in special education or in mainstream school setting, the vast majority of the participants stated 6 to 10 years (54.3% and 40% respectively). Finally, the average of student population of the school unit participants serve is equal to 118 students and the standard deviation was calculated equal to 102.

In the questions whether participants have general knowledge about the possibilities that ICT offers to students with special educational needs the majority of the sample answered positively while only 30 (14.3%) of 210 participants answered negatively and 12 (5.7%) of 210 feel undecided. Also, in the question whether participants are aware of the difficulties emerging by different types of disabilities regarding the use of ICT the majority answered positively and only the 24 (11.4%) of 210 participants answered negatively while 12 (5.7%) of 210 participants feel undecided. The majority of the sample (77.1%) stated that they know how to choose specific ICT tools based on the physical, sensory and cognitive characteristics of every student as well as the huge majority of the sample (80%) know ICT training practices for students with different type of disabilities.

However, in the question whether participants know applications that are supported by modern technology mobile phones and relate them to educational practices for disabled students, 60 (28.6%) of 210 participants answered negatively and 144 (68.6%) of 210 participants feel confident using modern technology mobile phones on educational practices.

Regarding the questions whether participants can find on the Internet educational material for disable students and whether they feel confident in helping disabled students to benefit from the use of ICT, the majority answered positively in both questions (88.5% and 80% respectively). Additionally, the majority of the sample (77.2%) stated that they know how to design activities with educational software for students with special educational needs.

Concerning, specifically, the visual disabilities , it seems that most of the participants are familiar with tools used by visually impaired as the 82.9% of the participants can explain the possibilities offered by braille typewriter, 71,4% of the sample know the possibilities offered by screen readers, 68% of the participants know different types of equipment connected to the computer and used by students dealing with visual problems and finally 62.8% of the sample are familiar with various screen magnifications software (e.g. JAWS).

Additionally, 71.5% of the sample are able to design teaching material in Word Editor, eliminating aspects that are difficult for students with visual impairments, 77.1% of the participants know websites with educational material for visually impairement students, 80% of the sample know the possibilities offered by ICT for students dealing with vision problems. However, 25.8% of the sample stated that they do not know specific browsers for the visually impaired and 20% of participants claimed that they are not able to apply teaching strategies and program adaptations supported by ICT in order to facilitate students with vision disabilities.

As far as hearing disabilities are concerned, the sample was spitted as 114 of 210 participants stated that they know sign language, less than half of the sample (48.6%) are familiar with various computer training programs uses to enhance oral and written speech while the 48.5% of the sample are able to apply ICT-based teaching strategies to facilitate the integration of hearing impaired students and know different speech retraining programs. Nonetheless, 62.9% of the asked population know websites with educational material for students with hearing problems and 51.4% of the sample know the possibilities that ICT offers to students with hearing problems.

Regarding mobility problems, the 82.9% of respondents recognize different types of keyboards for students dealing with mobility disabilities while only 30 of 210 participants answered negatively. Also, the majority of the sample have knowledge of computer software that controls the computer with voice command compared to 25.8% that stated having no knowledge. The vast majority of sample (80%) feel confident using educational material and able to implement ICT-based teaching strategies to facilitate the integration of students with mobility problems. Finally, 80% of the sample comprehend the possibilities that ICT tools offer to students of this type of disability.

Concerning cognitive skills, once again the majority of the sample (74.3%) feel confident using educational programs, while only 42 of 210 participants stated unconfident and 12 of 210 participants stated undecided. Additionally, the majority (82.9%) claimed that they know various websites with educational material for students with cognitive disabilities and 74.2% of the sample feel capable to implement teaching strategies using ICT tools in order to facilitate the integration of students with cognitive disabilities and 74.3% of the respondents feel confident of making adjustments to curricula supported by ICT tools and addressing to cognitive disabilities.

Moreover, the vast majority of the sample (85.7%) stated that they know various websites with educational material for students with cognitive disabilities, while only 30 (14.3%) of 210 respondents mentioned that they are unaware of the possibilities offered by ICT tools to students with the above disabilities and only 12 (5.7%) of 210 respondents feel undecided. Lastly, 62.9% of the sample claimed that they know the possibilities offered by operating systems, turning the work environment more accessible to students with cognitive disabilities. Finally, only the 48.5% of respondents are able to adapt a computer, including peripherals to the educational need of every student.

As far as the accessibility issues are concerned, the sample was spitted. In the first question regarding website accessibility testing, 37.1% of the sample claimed that they do not know what is accessibility testing in comparison to 48.6% of the sample that stated they know about accessibility testing. Moreover, only 90 (42.9%) of 210 participants are familiar with the general WAI/W3C website accessibility guidelines.

Moreover, the results of the research revealed that almost half of the sample (51.4%) are not able to create websites with high accessibility parameter, while 24 (11.4%) of 210 participants stated undecided. In addition to this, only the 40% of the sample is able to mention various accessibility tests and only the 42.9% of respondents admitted that they know several institutions related to the study and research of website accessibility.

The results of the T-test for all variables showed that only **7 of the 41 are significantly associated with gender**. In particular, women (M = 4.35, SD = 0.48) are more likely to find online educational materials for students with special educational needs than men (M = 3.93, SD = 1,130), t (113.07) = -3.29, p = 0.001. In addition, men (M = 3.40, SD = 1.09) know more about accessibility tests for websites than women (M = 2.60, SD = 1.25), t (203.11) = 4.95, p = 0.00001. Also, men (M = 3.20, SD = 1.11) are more familiar with the general WAI / W3C guidelines for website accessibility than women (M = 2.50, SD = 1, 29), t (203.85) = 4.21, p = 0.00001. Likewise men (M = 3.20, SD = 1.11) are more familiar with creating websites with high accessibility parameters than women (M = 2.20, SD = 1.21), t (208) = 6.12, p = 0.00001. Men (M = 3.40, SD = 1.15) also can more easily adapt a computer, including peripherals, to the educational needs of every student (M = 2.65, SD = 1.46), t (207.55) = 4.16, p = 0.00001.

Additionally, in question regarding the knowledge of different institutions related to the study and research of the accessibility of the websites, men (M = 3.33, SD = 1.25) know more about the various institutions related to the study and research of website accessibility than women (M = 2.40, SD = 1,32), t (208) = 5.17, p = 0.00001. In particular, men (M = 3.13, SD = 1.21) are able to report various accessibility tests from women (M = 2.65, SD = 1.50), t (206.83) = 2.58, p = 0.01.

Regarding the ANOVA analysis, it could be concluded that the younger the age and the greater the teaching experience, the higher the level of general knowledge about the possibilities that ICT offers to students with special educational needs. Moreover, one more conclusion is that the younger the age and the greater teaching experience, the more they know about the difficulties created by different types of disabilities regarding the use of ICT. Whereas, the younger the age and the greater the teaching experience, the better Educators know how to select specific ICT tools based on the physical, sensory and cognitive characteristics of different individuals.

It was also concluded that the younger the age and the older the teaching experience, the better they know about ICT training practices for students with different types of disabilities. Additional Anova analysis showed that the younger the age and the older the teaching experience, the better Educators know applications that are supported by modern technology mobile phones and relate to educational practices in special education.

Moreover, the research nalysis revealed that the younger the age and the greater the teaching experience, the better able they are to find educational material for students with special educational needs on the Internet. In addition, the younger the age and the greater the teaching experience, Educators feel more ready to support the student with special educational needs to benefit from the use of ICT.

Another conclusion is that the younger the age and the greater the teaching experience, the better teachers know how to plan activities with educational software for students with special educational needs. While, the younger the age and the greater the teaching experience in special education, Educators feel more capable of coping with the possibilities offered by a braille typewriter for students with vision problems.

Other conclusions that revealed from the research is that the younger the age and the greater the teaching experience in special education, the better Educators know the possibilities offered by screen readers for students with visual impairments and cognitive disabilities. In addition, the younger the age and the greater the teaching experience in special education, the better Educators know the different types of equipment connected to the computer used by students with vision problems and cognitive disabilities. Moreover, the younger the age and the greater the teaching experience and special education, the better Educators know various screen magnification software such as JAWS, used by students with visual.

From the survey, it was concluded that the younger the age and the greater the teaching experience in special education, the better Educators can design teaching material in Word Editor, eliminating the aspects that make it difficult for students with visual impairments and cognitive disabilities. As well as the younger the age and the greater the teaching experience in special education, the better Educators know specific browsers for students with visual impairments.

Furthermore, the younger the age and the greater the teaching experience in special education, the better Educators know websites with educational material for students with visual impairments and the more able they are to apply teaching strategies and adaptations to ICT-supported curricula to facilitate the inclusion of students with visual impairments. Finally, regarding vision disabilities, the younger the age and the greater the teaching experience in special education, the more Educators know about the possibilities that ICT offers to students with vision problems.

As far as hearing disabilities is concerned, from the research came out that the younger the age and the greater the teaching experience in special education and especially full-time Educators under public law contract, the better they know the sign language. Moreover, the more they know about the various computer training programs used to enhance oral and written speech and the better they know various websites with educational material for students with hearing problems as well as the more they are able to implement ICT-based teaching strategies to facilitate the integration of students dealing with hearing problems.

In addition, it concluded that the younger the age and the greater the teaching experience in special education, the better Educators know the possibilities that ICT offers to students with hearing problems and especially full-time public contract Educators, the more different speech retraining programs they know.

Concerning mobility problems, the younger the age and the greater the teaching experience in special education, Educators know more different types of keyboards for students with mobility problems as well as the better they know computer software that controls the computer with voice command. In addition, the younger the age and the greater the teaching experience in special education, the better they know educational material for students with mobility problems and the greater the teaching experience and special education, the greater their ability to apply ICT-based teaching strategies to facilitate the integration of students with mobility problems. Finally, in regard to mobility disabilities, it could be summed up that the younger the age and the greater the teaching experience in special education, the better they know the possibilities that ICT offers to students with mobility problems and cognitive disabilities.

With reference to cognitive disabilities, the younger the age and the greater the teaching experience in special education, the better Educators know educational programs used to support cognitive skills and the better they know various websites with educational material for students with cognitive disabilities as well as the more able they are to implement teaching strategies using ICT tools in order to facilitate the integration of students with cognitive disabilities. In addition, the younger the age and the greater the teaching experience and special education experience, especially full-time contractors under private law, the greater their ability to make adjustments to the curricula supported by ICT tools and aimed at students with cognitive disabilities. Moreover, from the research, it was concluded that the younger the age and the greater the teaching experience in special education, the better Educators know various websites with educational material for students with cognitive disabilities and the possibilities offered by ICT tools while the younger the age and the greater the teaching experience in special education, the better Educators know the possibilities offered by the operating systems - more accessible to students with cognitive disabilities.

As far as the website accessibility tests, it is concluded that the greater the teaching experience and in special education, the more familiar Educators are with accessibility test. Moreover, the greater the teaching experience and special education, the more they know about general WAI / W3C guidelines for website accessibility.

From the results of the research it seems that the older the age and the greater the teaching experience in special education, especially for full-time Educators under private law, the greater their ability to create websites with high accessibility parameters as well as the greater the teaching experience and special education, especially for full-time private law Educators, the greater their ability to adapt a computer, including peripherals, to the educational needs of all students with disabilities and the teaching experience in special education, especially full-time private law Educators, the better they know about the various institutions involved in the study and research of website accessibility. Finally, the greater the teaching experience and in special education, the greater Educators' ability to report various accessibility tests.

In conclusion, according to the regression analysis of the current research, the independent variables that play the most important role are **age** and **years of teaching experience** in **typical** but also in **special education**, as for the type of employment it came up that little contribution make to the results and only for full-time Educators with public or private contracts.

Taking everything into consideration, it shall be reminded and sum up that the choice of authoring tools is not easy. Sure, it is a personal matter and the choice depends on the previous experience of user preferences. But surely there is no answer style that "This tool is the best". It should always kept in kind that every developed app should comply with the *Universal Design* meaning to be accessible by all, including the disable.

Furthermore, it is frequently mention that regarding disabilities, two elements should be noted. First, software that is useful for students with one type of impairment might, in fact, create barriers for students with a different impairment. For example, software that creates graphics is useful for students with learning disabilities, as these facilitate visual cues to learning. Yet, this same software can create barriers for students who are blind. Secondly, students consider software such as spell checkers useful in enhancing

their performance and in improving the quality of their work. On the other hand, they see such tools as detracting from the actual learning process.

It is generally agreed that computers have potential to support students with disabilities by easing the physical processes involved in writing, helping to manage planning and revising processes, and supporting social interaction and communication. Access to the Internet is still a problem for some rural areas and people with disabilities. Social isolation can be a drawback, and the lack of nonverbal cues can hinder communication. Although the Internet can promote active learning, some contend that, like television, it can breed passivity (Filipczak, 1995).

All in all, the positive effect of computer, information and adaptive technologies is that there is a good agreement between students and teacher for providing services to students with disabilities. More specifically, take for example the word processing that eliminates the need to handwrite and results in neat presentations. Another example is that computer technologies allow access to an abundance of information, that students can work faster with the aid of computer, as well as computers provide independence empowerment and autonomy. In addition to this, computers can compensate for students' disabilities, and that they allow students to easily edit and revise their work. Furthermore, computers allowed them to work at their own pace and schedule, this is particularly significant for students with medical conditions whose energy levels fluctuated during the day.

Finally, content developers need to make the content understandable and navigable. This includes not only the language making it clear simple, understandable, but also providing mechanisms for navigating in and between pages. Providing navigation tools and page navigation information will maximize accessibility and usability. Not all users can make use of visual cues such as images, maps, side-by-side frames, or graphics. It should be taken into account the fact that users also lose information when they can only see one part of a page, either because they have access to the page one word at a time (synthetic speech or Braille display), or one section at a time (small screen, or an enlarged screen). Thus, without orientation information, users might not be able to understand very large tables, directories, menus, etc.

Suggestions for Future Research

Owing to the large number of children diagnosed with some type of disability, it would be interesting for a study exploring the use of ICT and accessibility issues in a greater sample, as well.

Some personal suggestions of the author of this Phd thesis with reference to the issue of the involvement of the new technologies in education of students with disabilities is to provide student discounts, to make adaptive hardware and software less expensive, and to provide grants to educational institutions to purchase equipment for student use. Other suggestions stress that companies should make their products more user friendly, ensure that advertising reaches students with disabilities, include accessibility features for a variety of users with disabilities when designing hardware or software, provide trial periods, make manuals/tutorials easier to understand, and provide training as well as better technical support. Future researchers may wish to examine the relationships between content taught across multiple strands.

Meaningful contributions can be made to the body of literature to the point of this area by carrying out researches on the needs of students, teachers, parents, and administrators for assistive technologies in special education. In addition, it is essential to include researches on the assessment of the existing needs and how to meet them, and on the assessment of the assistive technology implementations. McKnight and Davies (2013) suggested in their survey on the learning process that the following be taken into account: a) the needs and abilities of the children, b) the ability range of technology, and c) the learning environment. The number of those who can take advantage from this literature review will meaningfully boost if the results of the studies on Assistive Technologies are notified in congresses and symposiums as well as on a common website. In addition, it is essential that pre-service educators trained in special education and studying in undergraduate and graduate education programs be offered with the information and skills on Assistive Technologies and on the use of computers, tablets, etc.

The web today is a platform through which can be provided a variety of services with e-learning to be one of them. Since web creation, its one main objective is universal access. When web evolved into a much richer medium (including images, videos, data interaction, etc.) access for disability began to become more difficult. Thus, the W3C and especially WAI has taken over the project to issue relevant instructions on the basis of which content of a site may be accessible from the disabled.

Although web technologies are evolving with rapid rhythms, the question that arises is if accessibility standards can keep up with them or whether accessibility instructions can follow the developments. The answer is They have to! Today a new way of thinking is formed on accessibility issues. Instead of controlling the result, the process of its production should be controlled! More specifically, the tools that produce content, the way a company develops websites and the standards and procedures that should be followed.

To sum up, students with disabilities can and do use computer and information technologies to help them succeed in postsecondary education. Lack of knowledge about how to use specialized computer technologies on the part of both students and staff who oversee the technology is an important concern. If it is to be used effectively, systematic training must be seen as part of the overall investment in the equipment itself. It is extremely important for software applications to be accessible to all citizens of the Information Society (IS), including people with disabilities through a variety of different devices. Finally, computer technologies can enable or prompt problems for disabled students. Little effort is required to make materials accessible to all students. Furthermore, non-disabled students are likely to benefit from the recommended modifications as well. Lasty, it should be kept in mind that **inclusive educatio**n is not a stage to which we must arrive, but a continuous process so that all students learn and participate together.

It's not a faith in technology.
It's faith in people!

-Steve Jobs-

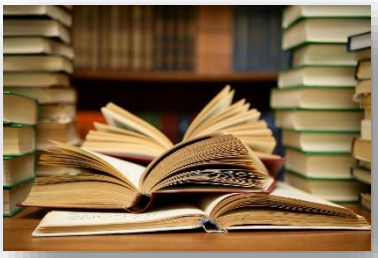


Figure 114 : Books Retrieved from: https://www.sydney.edu.au/arts/schools/school-of-literature-art-and-media/department-of-english.html

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Appendix I

DIMENSION 1 - Demographic Data

1. **Sex**

   Male Female Undefined

2. **Age**

   <30 31-35 36-40 41-45 46-50 >51

3. **Main Specialty:**
4. Other Studies
   a. Degree from another scientific field
   b. Postgraduate Diploma
   c. Doctoral Diploma
   d. Postgraduate training in Teaching
5. **Training in New Technologies**
   e. Short-term training
   f. Quarterly / Semester training
   g. Annual training
   h. Self-taught
   i. None
6. **Type of Employment**
   j. Full-time contract under Private Law
   k. Part time with a contract under Private Law
   l. Hourly wage with a contract under Private Law
   m. Full-time contract under Public Law
7. **Years of Teaching Experience**
   1-5 6-10 11-15 16-20 21-25 26-30 >31
8. **Years of Teaching Experience in Special Education**

   1-5 6-10 11-15 16-20 21-25 26-30 >31
9. **School Unit-Student Potential (Number of students attending the service school unit).**

DIMENSION 2 - Main Part of the Research

1. **I have general knowledge about the possibilities that ICT offers to students with special educational needs.**
   Strongly Disagree Disagree Undecided Agree Strongly Agree
2. **I am aware of the difficulties created by different types of disabilities regarding the use of ICT.**
   Strongly Disagree Disagree Undecided Agree Strongly Agree

3. **I know how I choose specific ICT tools based on the physical, sensory and cognitive characteristics of every student.**
   Strongly Disagree Disagree Undecided Agree Strongly Agree
4. **I know ICT training practices for students with different types of disabilities.**
   Strongly Disagree Disagree Undecided Agree Strongly Agree
5. **I know applications that are supported by modern technology mobile phones and relate to educational practices in special education.**
   Strongly Disagree Disagree Undecided Agree Strongly Agree
6. **I consider that I am able to find on the Internet educational material for students with special educational needs.**
   Strongly Disagree Disagree Undecided Agree Strongly Agree
7. **I feel ready to help a student with special educational needs to benefit from the use of ICT.**
   Strongly Disagree Disagree Undecided Agree Strongly Agree
8. **I know how to design activities with educational software for students with special educational needs**
   Strongly Disagree Disagree Undecided Agree Strongly Agree
9. **I am able to explain the possibilities offered by a braille typewriter for students with visual impairments and cognitive disabilities.**
   Strongly Disagree Disagree Undecided Agree Strongly Agree
10. **I know the possibilities offered by screen readers for the visually impaired and cognitively disabled.**
    Strongly Disagree Disagree Undecided Agree Strongly Agree
11. **I know different types of equipment connected to the computer and used by students with visual impairments.**
    Strongly Disagree Disagree Undecided Agree Strongly Agree
12. **I am familiar with various screen magnification software such as JAWS, used by students with visual impairments.**
    Strongly Disagree Disagree Undecided Agree Strongly Agree
13. **I can design teaching materials in Word Editor, eliminating aspects that are difficult for students with visual impairments.**
    Strongly Disagree Disagree Undecided Agree Strongly Agree
14. **I know specific browsers for the visually impaired and cognitively disabled.**
    Strongly Disagree Disagree Undecided Agree Strongly Agree
15. **I know websites with educational material for students with visual impairments.**
    Strongly Disagree Disagree Undecided Agree Strongly Agree
16. **I am able to apply teaching strategies and program adaptations supported by ICT to facilitate the inclusion of students with vision problems.**
    Strongly Disagree Disagree Undecided Agree Strongly Agree
17. **I know the possibilities that ICT offer to students with visual impairments and cognitive disabilities.**
    Strongly Disagree Disagree Undecided Agree Strongly Agree

18. I know sign language.
Strongly Disagree Disagree Undecided Agree Strongly Agree

19. . I am familiar with various computer training programs used to enhance oral and written speech.
Strongly Disagree Disagree Undecided Agree Strongly Agree

20. . I know various websites with educational material for studnets with hearing problems.
Strongly Disagree Disagree Undecided Agree Strongly Agree

21. I am able to apply ICT-based teaching strategies to facilitate the integration of hearing-impaired students.
Strongly Disagree Disagree Undecided Agree Strongly Agree

22. I know the possibilities that ICT offer to students with hearing problems.
Strongly Disagree Disagree Undecided Agree Strongly Agree

23. I know different speech retraining programs.
Strongly Disagree Disagree Undecided Agree Strongly Agree

24. I know different types of keyboards for students with mobility problems.
Strongly Disagree Disagree Undecided Agree Strongly Agree

25. I know computer software that controls the computer with voice command.
Strongly Disagree Disagree Undecided Agree Strongly Agree

26. I know educational material for students with mobility problems.
Strongly Disagree Disagree Undecided Agree Strongly Agree

27. I am able to implement ICT-based teaching strategies to facilitate the integration of students with mobility problems.
Strongly Disagree Disagree Undecided Agree Strongly Agree

28. I know the possibilities that ICT offer to students with mobility problems and cognitive disabilities.
Strongly Disagree Disagree Undecided Agree Strongly Agree

29. . I know educational programs used to support cognitive skills.
Strongly Disagree Disagree Undecided Agree Strongly Agree

30. I know various websites with educational material for students with cognitive disabilities.
Strongly Disagree Disagree Undecided Agree Strongly Agree

31. I am able to implement teaching strategies using ICT tools to facilitate the integration of students with cognitive disabilities.
Strongly Disagree Disagree Undecided Agree Strongly Agree

32. I am able to make adjustments to curricula supported by ICT tools and addressing to cognitive disabilities.
Strongly Disagree Disagree Undecided Agree Strongly Agree

33. I know various websites with educational material for students with cognitive disabilities.
Strongly Disagree Disagree Undecided Agree Strongly Agree

34. I know the possibilities offered by ICT tools to students with cognitive disabilities.
Strongly Disagree Disagree Undecided Agree Strongly Agree

35. I know the possibilities offered by operating systems, turning the work environment more accessible to students with cognitive disabilities.

Strongly Disagree Disagree Undecided Agree Strongly Agree

36. I know what website accessibility testing is.

Strongly Disagree Disagree Undecided Agree Strongly Agree

37. I am familiar with the general WAI / W3C website accessibility guidelines.

Strongly Disagree Disagree Undecided Agree Strongly Agree

38. I am able to create websites with high accessibility parameters.

Strongly Disagree Disagree Undecided Agree Strongly Agree

39. I am able to adapt a computer, including peripherals, to the educational needs of every student.

Strongly Disagree Disagree Undecided Agree Strongly Agree

40. I know various institutions related to the study and research of the accessibility of websites.

Strongly Disagree Disagree Undecided Agree Strongly Agree

41. I am able to mention various accessibility tests.

Strongly Disagree Disagree Undecided Agree Strongly Agree