



REVISTA INCLUSIONES

HOMENAJE A MAJA ZAWIERZENIEC

Revista de Humanidades y Ciencias Sociales

Volumen 7 . Número Especial

Abril / Junio

2020

ISSN 0719-4706

CUERPO DIRECTIVO

Directores

Dr. Juan Guillermo Mansilla Sepúlveda

Universidad Católica de Temuco, Chile

Dr. Francisco Ganga Contreras

Universidad de Tarapacá, Chile

Subdirectores

Mg © Carolina Cabezas Cáceres

Universidad de Las Américas, Chile

Dr. Andrea Mutolo

Universidad Autónoma de la Ciudad de México, México

Editor

Drdo. Juan Guillermo Estay Sepúlveda

Editorial Cuadernos de Sofía, Chile

Editor Científico

Dr. Luiz Alberto David Araujo

Pontificia Universidade Católica de Sao Paulo, Brasil

Editor Brasil

Drdo. Maicon Herverton Lino Ferreira da Silva

Universidade da Pernambuco, Brasil

Editor Europa del Este

Dr. Aleksandar Ivanov Katrandzhiev

Universidad Suroeste "Neofit Rilski", Bulgaria

Cuerpo Asistente

Traductora: Inglés

Lic. Pauline Corthorn Escudero

Editorial Cuadernos de Sofía, Chile

Traductora: Portugués

Lic. Elaine Cristina Pereira Menegón

Editorial Cuadernos de Sofía, Chile

Portada

Lic. Graciela Pantigoso de Los Santos

Editorial Cuadernos de Sofía, Chile

COMITÉ EDITORIAL

Dra. Carolina Aroca Toloza

Universidad de Chile, Chile

Dr. Jaime Bassa Mercado

Universidad de Valparaíso, Chile

Dra. Heloísa Bellotto

Universidad de Sao Paulo, Brasil

Dra. Nidia Burgos

Universidad Nacional del Sur, Argentina

Mg. María Eugenia Campos

Universidad Nacional Autónoma de México, México

Dr. Francisco José Francisco Carrera

Universidad de Valladolid, España

Mg. Keri González

Universidad Autónoma de la Ciudad de México, México

Dr. Pablo Guadarrama González

Universidad Central de Las Villas, Cuba

Mg. Amelia Herrera Lavanchy

Universidad de La Serena, Chile

Mg. Cecilia Jofré Muñoz

Universidad San Sebastián, Chile

Mg. Mario Lagomarsino Montoya

Universidad Adventista de Chile, Chile

Dr. Claudio Llanos Reyes

Pontificia Universidad Católica de Valparaíso, Chile

Dr. Werner Mackenbach

Universidad de Potsdam, Alemania

Universidad de Costa Rica, Costa Rica

Mg. Rocío del Pilar Martínez Marín

Universidad de Santander, Colombia

Ph. D. Natalia Milanesio

Universidad de Houston, Estados Unidos

Dra. Patricia Virginia Moggia Münchmeyer

Pontificia Universidad Católica de Valparaíso, Chile

Ph. D. Maritza Montero

Universidad Central de Venezuela, Venezuela

Dra. Eleonora Pencheva

Universidad Suroeste Neofit Rilski, Bulgaria

Dra. Rosa María Regueiro Ferreira

Universidad de La Coruña, España

Mg. David Ruete Zúñiga

Universidad Nacional Andrés Bello, Chile

Dr. Andrés Saavedra Barahona

Universidad San Clemente de Ojrid de Sofía, Bulgaria

Dr. Efraín Sánchez Cabra
Academia Colombiana de Historia, Colombia

Dra. Mirka Seitz
Universidad del Salvador, Argentina

Ph. D. Stefan Todorov Kapralov
South West University, Bulgaria

COMITÉ CIENTÍFICO INTERNACIONAL

Comité Científico Internacional de Honor

Dr. Adolfo A. Abadía
Universidad ICESI, Colombia

Dr. Carlos Antonio Aguirre Rojas
Universidad Nacional Autónoma de México, México

Dr. Martino Contu
Universidad de Sassari, Italia

Dr. Luiz Alberto David Araujo
Pontificia Universidad Católica de Sao Paulo, Brasil

Dra. Patricia Brogna
Universidad Nacional Autónoma de México, México

Dr. Horacio Capel Sáez
Universidad de Barcelona, España

Dr. Javier Carreón Guillén
Universidad Nacional Autónoma de México, México

Dr. Lancelot Cowie
Universidad West Indies, Trinidad y Tobago

Dra. Isabel Cruz Ovalle de Amenabar
Universidad de Los Andes, Chile

Dr. Rodolfo Cruz Vadillo
Universidad Popular Autónoma del Estado de Puebla, México

Dr. Adolfo Omar Cueto
Universidad Nacional de Cuyo, Argentina

Dr. Miguel Ángel de Marco
Universidad de Buenos Aires, Argentina

Dra. Emma de Ramón Acevedo
Universidad de Chile, Chile

Dr. Gerardo Echeita Sarrionandia
Universidad Autónoma de Madrid, España

Dr. Antonio Hermosa Andújar
Universidad de Sevilla, España

Dra. Patricia Galeana
Universidad Nacional Autónoma de México, México

Dra. Manuela Garau
Centro Studi Sea, Italia

Dr. Carlo Ginzburg Ginzburg
Scuola Normale Superiore de Pisa, Italia
Universidad de California Los Ángeles, Estados Unidos

Dr. Francisco Luis Girardo Gutiérrez
Instituto Tecnológico Metropolitano, Colombia

José Manuel González Freire
Universidad de Colima, México

Dra. Antonia Heredia Herrera
Universidad Internacional de Andalucía, España

Dr. Eduardo Gomes Onofre
Universidade Estadual da Paraíba, Brasil

Dr. Miguel León-Portilla
Universidad Nacional Autónoma de México, México

Dr. Miguel Ángel Mateo Saura
Instituto de Estudios Albacetenses "Don Juan Manuel", España

Dr. Carlos Tulio da Silva Medeiros
Diálogos em MERCOSUR, Brasil

+ Dr. Álvaro Márquez-Fernández
Universidad del Zulia, Venezuela

Dr. Oscar Ortega Arango
Universidad Autónoma de Yucatán, México

Dr. Antonio-Carlos Pereira Menaut
Universidad Santiago de Compostela, España

Dr. José Sergio Puig Espinosa
Dilemas Contemporáneos, México

Dra. Francesca Randazzo
Universidad Nacional Autónoma de Honduras, Honduras

Dra. Yolando Ricardo

Universidad de La Habana, Cuba

Dr. Manuel Alves da Rocha

Universidade Católica de Angola Angola

Mg. Arnaldo Rodríguez Espinoza

Universidad Estatal a Distancia, Costa Rica

Dr. Miguel Rojas Mix

*Coordinador la Cumbre de Rectores Universidades
Estatales América Latina y el Caribe*

Dr. Luis Alberto Romero

CONICET / Universidad de Buenos Aires, Argentina

Dra. Maura de la Caridad Salabarría Roig

Dilemas Contemporáneos, México

Dr. Adalberto Santana Hernández

Universidad Nacional Autónoma de México, México

Dr. Juan Antonio Seda

Universidad de Buenos Aires, Argentina

Dr. Saulo Cesar Paulino e Silva

Universidad de Sao Paulo, Brasil

Dr. Miguel Ángel Verdugo Alonso

Universidad de Salamanca, España

Dr. Josep Vives Rego

Universidad de Barcelona, España

Dr. Eugenio Raúl Zaffaroni

Universidad de Buenos Aires, Argentina

Dra. Blanca Estela Zardel Jacobo

Universidad Nacional Autónoma de México, México

Comité Científico Internacional

Mg. Paola Aceituno

Universidad Tecnológica Metropolitana, Chile

Ph. D. María José Aguilar Idañez

Universidad Castilla-La Mancha, España

Dra. Elian Araujo

Universidad de Mackenzie, Brasil

Mg. Rумыana Atanasova Popova

Universidad Suroeste Neofit Rilski, Bulgaria

Dra. Ana Bénard da Costa

Instituto Universitario de Lisboa, Portugal

Centro de Estudios Africanos, Portugal

Dra. Alina Bestard Revilla

*Universidad de Ciencias de la Cultura Física y el
Deporte, Cuba*

Dra. Noemí Brenta

Universidad de Buenos Aires, Argentina

Ph. D. Juan R. Coca

Universidad de Valladolid, España

Dr. Antonio Colomer Vialdel

Universidad Politécnica de Valencia, España

Dr. Christian Daniel Cwik

Universidad de Colonia, Alemania

Dr. Eric de Léséulec

INS HEA, Francia

Dr. Andrés Di Masso Tarditti

Universidad de Barcelona, España

Ph. D. Mauricio Dimant

Universidad Hebrea de Jerusalén, Israel

Dr. Jorge Enrique Elías Caro

Universidad de Magdalena, Colombia

Dra. Claudia Lorena Fonseca

Universidad Federal de Pelotas, Brasil

Dra. Ada Gallegos Ruiz Conejo

Universidad Nacional Mayor de San Marcos, Perú

Dra. Carmen González y González de Mesa

Universidad de Oviedo, España

Ph. D. Valentin Kitanov

Universidad Suroeste Neofit Rilski, Bulgaria

Mg. Luis Oporto Ordóñez

Universidad Mayor San Andrés, Bolivia

Dr. Patricio Quiroga

Universidad de Valparaíso, Chile

Dr. Gino Ríos Patio

Universidad de San Martín de Porres, Perú

**REVISTA
INCLUSIONES**
REVISTA DE HUMANIDADES
Y CIENCIAS SOCIALES

Dr. Carlos Manuel Rodríguez Arrechavaleta
Universidad Iberoamericana Ciudad de México, México

Dra. Vivian Romeu
Universidad Iberoamericana Ciudad de México, México

Dra. María Laura Salinas
Universidad Nacional del Nordeste, Argentina

Dr. Stefano Santasilia
Universidad della Calabria, Italia

Mg. Silvia Laura Vargas López
Universidad Autónoma del Estado de Morelos, México

**CUADERNOS DE SOFÍA
EDITORIAL**

Dra. Jaqueline Vassallo
Universidad Nacional de Córdoba, Argentina

Dr. Evandro Viera Ouriques
Universidad Federal de Río de Janeiro, Brasil

Dra. María Luisa Zagalaz Sánchez
Universidad de Jaén, España

Dra. Maja Zawierzeniec
Universidad Wszechnica Polska, Polonia

Editorial Cuadernos de Sofía
Santiago – Chile
Representante Legal
Juan Guillermo Estay Sepúlveda Editorial

Indización, Repositorios y Bases de Datos Académicas

Revista Inclusiones, se encuentra indizada en:





REX



UNIVERSITY OF
SASKATCHEWAN



Universidad
de Concepción

BIBLIOTECA UNIVERSIDAD DE CONCEPCIÓN



SOFTWARE PRODUCTS FOR CREATING EDUCATIONAL VIDEO COURSES FOR PEOPLE WITH PHYSICAL DISABILITIES

Dr. (C) Diana Arkad'evna Denisova

Russian State Social University, Russia

ORCID ID: 0000-0002-3759-4557

dina_d_05@mail.ru

Dr. (C) Natalia Gennadyevna Levanova

Togliatti State University, Russia

ORCID ID: 0000-0002-5643-0793

lewanowa.natalya@yandex.ru

Ph. D. (C) Oleg Mikhailovich Tolmachev

Bauman Moscow State Technical University, Russia

oltom@bmstu.ru

ORCID ID: 0000-0003-3354-7806

Ph. D. (C) Ekaterina Dmitrievna Dobrova

Moscow Aviation Institute (National Research University), Russia

ORCID ID: 0000-0002-1795-5597

kdobrova@mail.ru

Fecha de Recepción: 11 de enero de 2020 – **Fecha Revisión:** 23 de enero de 2020

Fecha de Aceptación: 06 de marzo de 2020 – **Fecha de Publicación:** 01 de abril de 2020

Abstract

The article identifies the benefits of implementing information and communication technologies in inclusive education, areas, in which information and communication technology support are recommended, as well as the main types of information and communication technologies suitable for use as a support tool for inclusive learning. The authors characterize the main problems of implementing information and communication technologies to support inclusive education and the conditions, the implementation of which will help to prevent them.

Keywords

People with physical disabilities – Educational video – Video editor – Graphic editor

Para Citar este Artículo:

Denisova, Diana Arkad'evna; Levanova, Natalia Gennadyevna; Tolmachev, Oleg Mikhailovich y Dobrova, Ekaterina Dmitrievna. Software products for creating educational video courses for people with physical disabilities. Revista Inclusiones Vol: 7 num Especial (2020): 357-370.

Licencia Creative Commons Attribution Non-Comercial 3.0 Unported

(CC BY-NC 3.0)

Licencia Internacional



DR. (C) DIANA ARKAD'EVNA DENISOVA / DR. (C) NATALIA GENNADYEVNA LEVANOVA
PH. D. (C) OLEG MIKHAILOVICH TOLMACHEV / PH. D. (C) EKATERINA DMITRIEVNA DOBROVA

Introduction

In recent years, significant changes have taken place in the field of education¹. In particular, the range of training tools has expanded significantly: in addition to traditional ones, multimedia tools are being introduced that integrate plain text with sound, graphics, video, and animation². Modern transformations are aimed at updating the content, structure, and teaching methods that can satisfy the needs of each participant in the educational process, opening access to training for those who did not have such an opportunity before.

The widespread use of information and communication technologies (ICT) and interactive multimedia and simplified access to global networks, in particular, the Internet, allows N.V. Arzumanova to argue that:

- the learning process is gradually becoming independent of the physical location of the subjects;

- the quantity and variety of resources available to school/college students outside of class hours has increased significantly;

- the locus of control in the initiation of the educational process went to school/college students: they can initiate the process on their own at any time convenient for them, anywhere³.

L.A. Osmuk argues that the range of educational needs of people with physical disabilities (PD) is much wider compared with healthy school/college students. On the one hand, they must master at the level of their peers the knowledge, abilities, and skills necessary for full-fledged social interaction. On the other hand, they have additional needs caused by their functional limitations, which sometimes makes it impossible to use standard teaching methods and can also negatively affect academic performance and self-esteem⁴.

The process of accounting and satisfying the diverse needs of each school/college student by expanding participation in education, cultural and social activities has been

¹ N. Rodinova; I. Romagna; V. Ostroukhov; V. Berezhnyakovskiy y A. Grunina, "Improvement of Universities' Competitiveness: Attraction of Non-State Funds", *Revista Inclusiones*, Vol: 7 (2020): 154-160.

² L. P. Muhammad; S. G. Persiyanova; B. I. Karadzhev y V. N. Levina, "Teaching foreign students to develop a monologic discourse based on cataphoric means", *Amazonia investiga*, num 8 Vol: 23 (2019):17-26; S. M. Petrova y G. E. Zhondorova, "Graphic and symbolic teaching the Russian language to foreigners as the basis of linguodidactic resource «Russian philology in the Russian northeast and APR countries (China, Korea, Mongolia, Japan)», *Espacios*, Vol: 39 num 29 (2018); L. L. Alekseeva y D. I. Belov, "Painting teaching and artistic development of schoolchildren", *Espacios*, Vol: 39 num 21 (2018); N. Rodinova; I. Romagna; V. Ostroukhov; V. Berezhnyakovskiy y A. Grunina, *Improvement of Universities...* y L. M. Kupriyanova; A. P. Albov; A. I. Kairova; V. V. Andrianova y S. L. Nikonovich, "Work Improvement of Customs Authorities in The Context of Creating A Favorable Environment for People with Disabilities: Legal Aspect", *Revista Inclusiones*, Vol: 7 (2020): 347-357.

³ N. V. Arzumanova, "Isopolzovanie sovremennykh informatsionnykh tekhnologii v obrazovatelnom protsesse", *Izvestiya RGPU im. A.I. Gertsena*, num 113 (2009): 86-90.

⁴ L. A. Osmuk, "Obrazovatelnye potrebnosti uchashchikhsya s ogranichennymi vozmozhnostyami zdorovya", *Vysshee obrazovanie v Rossii*, num 12 (2010): 137-143.

identified by UNESCO as inclusive education. It involves the introduction of adjustments and changes to the content, approaches, structure, and strategies based on a single concept, covering all, without exception, individuals of the same age group and the realization that the training of each person is the responsibility of the formal education system⁵.

Within the framework of an inclusive approach, the diversity of school/college students and their differences are viewed not as a problem, but as an opportunity to enrich the educational process. The goal of inclusive education is to ensure that the entire education system contributes to the development of an environment, in which educators and school/college students readily accept the challenges and benefits of diversity. This approach allows us to find methods for transforming education systems to meet the needs of a wide range of students⁶. The compensatory property of new technologies allows people with PD to take an active part in the educational process despite functional limitations. Through the use of ICT, they can overcome barriers to learning, as they gain access to a variety of didactic materials in an accessible and acceptable format⁷.

According to J. Simpson, ICT can be used as a compensatory, communication and didactic tool in special and inclusive education. The use of ICT as a compensatory tool means using them as technical support for traditional types of activities, such as reading and writing, facilitating access to didactic resources and educational interaction, partially compensating for or replacing the lack of natural functions. As a communication tool, ICT can be used to provide an alternative form of communication, support alternative communication, as well as a tool to facilitate and/or make communication possible, allowing individuals with PD to communicate more conveniently. The use of ICT as a didactic tool necessitated a review of traditional approaches to teaching and schooling, creating a new milestone in educational transformations. New technologies have brought a variety of pedagogical strategies for teaching people with PD, becoming a real tool for introducing inclusive education⁸.

Researchers note that it is advisable to select ICT tools, in particular, assistive technologies and auxiliary software, taking into account the specifics of various functional limitations. The pedagogically balanced and appropriate use of ICT will allow school/college students with disabilities to fully engage in the educational process and to develop individual educational strategies acceptable to them⁹.

Among the benefits of ICT support for inclusive learning, researchers note the following (Table 1).

⁵ L. Florian, "Special or inclusive education: future trends", *British Journal of Special Education*, Vol: 35 num 4 (2008): 202-208.

⁶ L. A. Khizhnyak, "Inklyuzivnoe obrazovanie lits s ogranichennymi vozmozhnostyami zdorovya", *Bulletin of Moscow State Regional University*, num 2 (2015): 1-6.

⁷ M. Ainscow y A. Sandill, "Developing inclusive education systems: the role of organisational cultures and leadership", *International Journal of Inclusive Education*, Vol: 14 num 4 (2010): 401-416.

⁸ J. Simpson, "Inclusive Information and Communication Technologies for People with Disabilities", *Disability Studies Quarterly*, Vol: 29 num 1 (2009) <https://dsq-sds.org/article/view/167/167>

⁹ C. Hitchcock y S. Stahl, "Assistive Technology, Universal Design, Universal Design for Learning: Improved Learning Opportunities", *Journal of Special Education Technology*, Vol: 18 num 4 (2003): 45-52.

General benefits	Benefits for high school/college students	Benefits for teachers
<p>Contribute to the expansion of student (student) autonomy.</p> <p>Allow overcoming communication difficulties and barriers.</p> <p>Provide students with the opportunity to demonstrate learning outcomes conveniently.</p> <p>Allow the development of tasks taking into account the individual abilities and capabilities of school/college.</p>	<p>Independent access to training information.</p> <p>The ability to complete training tasks at one's own pace (in asynchronous mode).</p> <p>The ability of school/college students to use ICT as a compensatory tool and to access educational information in an alternative way.</p>	<p>The ability to communicate remotely with colleagues, to study the leading pedagogical experience of working with inclusive groups, and to spread one's own experience.</p> <p>Improving one's skills in using ICT to maintain effective work with school/college students.</p> <p>More opportunities for the preparation of didactic materials and visibility. In particular, due to multimedia, it is possible to carry out and adjust the impact on various sensory zones. Electronic materials are easier to adapt to the needs of school/college students (e.g. large print, braille, etc.)</p>

Table 1
Benefits of ICT support for inclusive learning¹⁰

Among the main areas, in which it is advisable to implement ICT support for inclusive education, the researchers note the following:

- determination of the initial level of personal development of the school/college student, i.e., the initial level with which they begin training;
- support for personal development through the formation of new skills or the development of already acquired ones;
- improving access to educational resources;
- overcoming geographical or social means of communication and network support;
- strengthening motivation to use and awareness of the benefits of ICT as a means of supporting inclusive learning¹¹.

Among the main types of ICT that are suitable for use as a means of supporting inclusive learning, researchers distinguish the following:

- standard technologies, such as personal computers (desktop PCs, portable PCs (laptops, netbooks), tablet PCs (tablets), etc.) with built-in settings for people with PD;

¹⁰ D. Bjekić; S. Obradović; M. Vučetić y M. Bojović, "E-teacher in Inclusive e-education for Students with Specific Learning Disabilities", *Procedia - Social and Behavioral Sciences*, num 128 (2014): 128-133.

¹¹ E. G. Goncharenko y A. A. Polovinkina, "Osobennosti primeneniya informatsionno-kommunikatsionnykh tekhnologii v inklyuzivnom obrazovanii", *Sotsialno-pedagogicheskaya podderzhka lits s ogranichennymi vozmozhnostyami zdorovya: teoriya i praktika*. Part 1, Yalta, Moscow. 2015. 61-67.

- available data formats, or alternative formats; for example, one of the available formats is HTML DAISY, a digital format standard for recording digital audiobooks; Braille printers, displays, and speech synthesizers, etc.

- assistive (auxiliary) technologies, such as hearing aids, screen readers, keyboards with special capabilities, alternative communication systems, etc.¹²

At the same time, educational content can be distributed in various formats: in the form of text on web pages, digital audio and video, animation, virtual reality environments, etc.¹³

Among the main problems of ICT implementation as a means of supporting inclusive education, researchers see the following:

- the high cost and/or low availability of ICT, especially assistive (auxiliary) technologies;

- refusal to use ICT due to the low level of ICT competence of users, their ignorance of the possibilities and advantages of using these technologies in inclusive education;

- teachers' unwillingness to use ICT due to insecurity, a negative attitude to technologies in general, and underestimation of the potential of these technologies in working with people from the Pension Fund of the Russian Federation (PFRF);

- insufficient support for teachers and school/college students, including lack of training and technical support for the use of specialized ICT and the like¹⁴.

To avoid these problems, the successful implementation of inclusive education using ICT to improve its quality and accessibility for people with PD, according to researchers, one needs to ensure the appropriate conditions, namely:

- the implementation of an appropriate ICT infrastructure that would satisfy the principles of accessibility, usability, flexibility, and cost-effectiveness;

- modification of curriculum components, including content, teaching methods, and performance assessment, introducing ICT taking into account the educational needs of school/college students;

- increasing the level of ICT competence of teachers of inclusive education, their awareness of the possibilities of using new technologies in pedagogical interaction with school/college students with PD¹⁵.

¹² F. K. Ahmad, "Use of Assistive Technology in Inclusive Education: Making Room for Diverse Learning Needs", *Transcience*, Vol: 6 num 2 (2015): 62-77.

¹³ A. G. Pérez, "Characterization of Inclusive Practices in Schools with Education Technology", *Procedia - Social and Behavioral Sciences*, num 132 (2014): 357-363.

¹⁴ J. Pivik; J. McComas y M. Laflamme, "Barriers and Facilitators to Inclusive Education", *Exceptional Children*, Vol: 69 num 1 (2002): 97-107.

¹⁵ N. Beacham y K. McIntosh, "Student teachers' attitudes and beliefs towards using ICT within inclusive education and practice", *Journal of Research in Special Educational Needs*, Vol: 14 num 3 (2014): 180-191.

Researchers note that the introduction of ICT alone is not enough to solve all the problems of teaching people with PD. An essential condition is the motivation and desire of teachers to apply and develop innovative teaching methods or adapt existing ones to the requirements of the time. It is necessary to create conditions for each school/college student so that they have the opportunity to acquire the necessary information and conveniently demonstrate learning outcomes. To do this, it is necessary to integrate ICT in all educational programs so that they harmoniously complement and support their implementation¹⁶.

One of the options for introducing ICT into the learning process for people with PD is the creation of educational video courses. Today, on the Internet one can find many audio and video courses, as well as training courses, on various topics that are used in educational activities. Among them, one can find both short lessons used to supplement educational information and whole courses for mastering a separate subject area. To create such training courses, many services and software products have been developed that differ in functionality, complexity, requirements for knowledge of a foreign language and programming languages, requirements for acquisition, etc.

The purpose of the article is to analyze the most preferred software products for creating video courses and the capabilities of support technologies when they are included in educational programs for people with PD.

The hypothesis of the study: the use of programs for recording video from the monitor screen and video editor makes it easy to create a video course, which, when using technologies to support educational programs for people with disabilities, will serve as a means of increasing the efficiency of their learning process.

According to the results of the study, we can conclude that the goal set in the study was achieved.

Methods

To achieve this goal, we used an expert survey method, followed by mathematical processing of the results to rank for:

- comparison of the capabilities of programs for recording video from the screen according to the following criteria: video recording format, recording mode, video quality, presence of auxiliary effects, type of distribution;

- comparison of the capabilities of video editors by the following criteria: maximum resolution, level of effects, unsupported formats, number of tracks, type of distribution. The ranking of the capabilities of programs for recording video from the screen and the capabilities of video editors consists of their arrangement by each of the experts in the form of a sequence according to the decrease in their preference. Moreover, each of the programs presented for comparison is evaluated by the rank (number) under which it is located in this sequence. The final rank of the program is the arithmetic average of all expert ranks in a sample of experts.

¹⁶ N. A. Goncharova; M. A. Goncharova y D. A. Fandeeva, "Informatsionnye i kommunikatsionnye tekhnologii v razvitii inkluzivnogo obrazovaniya v novykh sotsialno-ekonomicheskikh usloviyakh", Nauchnyi almanakh, Vol: 11 num 1 (2015): 104-107.

During the expert survey, the possibilities of technologies to support the development of educational programs that provide equal educational opportunities for people with disabilities were discussed.

If the error probability of the expert assessment is acceptable (5%), the required number of experts ($N = 0.5 \cdot (3/b + 5)$, where b is the admissible probability of examination error in percent/100) is 33 people.

35 experts were invited to an online expert survey, of which 18 people were employed by IT companies specializing in video editing, with work experience from 8 to 12 years, and 17 people belonged to the faculty of pedagogical universities, specialists in the field inclusive education and development of educational programs for people with disabilities with work experience of 10 to 15 years.

The choice of experts representing various aspects of the process of creating educational video courses for people with PD will, in our opinion, allows us to most widely cover our preferred software products.

Results

The experts noted that there were many special tools for recording video from the monitor screen. The competition of such programs in the software market encourages developers to improve and simplify their products. Therefore, the use of programs of this type does not contain any difficulties and does not require special knowledge from the user.

Of the wide variety of programs for recording video from the screen for expert review, the following programs were proposed: Bandicam, CamStudio, BB FlashBack, Movavi Screen Capture Studio, UvScreenCamera. Based on the results of our expert survey, we determined the advantages and disadvantages of the considered programs (Table 2).

Software	Video recording format	Recording mode	Video quality	Distribution type	Rank
Bandicam	.avi, .mp4	Window, section, full screen, fixed section	High	Paid (trial period)	1
CamStudio	.avi, swf	Window, section, full screen, fixed section	Average	Free	4
BB FlashBack	.avi, .mpeg4, .wmv, .gif, .flash, MS Powerpoint, .exe	Window, section, full screen	High	Paid	2-3
Movavi Screen Capture Studio	.avi, .wmv, .mov, .vob, .dat, .mkv, .webm, .mpeg, .mp4, .flv	Window, section, full screen	Average	Paid (trial period)	5
UvScreenCamera	.avi, swf, .flv, .exe, .gif	Window, section, full screen	High	Paid	2-3

Note: compiled on the basis of the expert survey

Table 2

Comparison of the features of the software for recording video from the screen

Based on the results of our expert comparison, we can say that Bandicam is the best software that one can use to capture video from the screen since it is characterized by a fairly high level of video quality and does not require high-performance computer systems. Besides, among its advantages, one can name the availability of functionality for capturing video from the screen of any games, programs or video streaming. Bandicam allows the user to fully customize the format and recording mode of video and audio. The user can also record video using a microphone, which simplifies the creation of an educational video. A significant drawback of this software is that it is so-called shareware, i.e. it can be used for free for a limited time. During the trial period, the program places its name in the form of a watermark at the top of each picture or video, and the length of the video is limited to 10 minutes.

Further, video editors were presented to experts for consideration.

Speaking about video editing programs used for editing videos, the experts noted that they contained basic tools with which one could make image corrections, add video effects, titles or change the sound. These programs can be divided into two types: professional and amateur software. Professional programs contain a complete set of various settings and tools for video editing. These programs are distributed on a paid basis. As a rule, they contain an unlimited number of audio and video editing panels, and they are also demanding on computer performance. Amateur applications, as a rule, are used for small tasks, such as cutting video, adding audio files, and changing the format. A big plus of such programs is that they are free and do not have high system requirements.

The following video editors were proposed for expert review: Windows Movie Maker, Windows Story Remix, Sony Vegas Pro, Movavi Video Editor, Camtasia Studio, VirtualDub. Based on the results of our expert survey, we determined the advantages and disadvantages of the reviewed video editors (Table 3).

Video editors	Maximum resolution	Effects level	Non-supported formats	Number of tracks	Distribution type	Rank
Windows Movie Maker	720 p	Low	.flv, .qt, .rm	1	Free	3
Windows Story Remix	1080 p	Average	.flv, .qt, .rm	1	Free	2
Sony Vegas Pro	4 K	High	-	∞	Paid (trial period)	1
Movavi Video Editor	1080 p	Average	.flv, .qt, .rm	1	Paid (trial period)	6
Camtasia Studio	1080 p	Average	.mov, .rm	∞	Paid (trial period)	4-5
VirtualDub	1080 p	Average	.qt, .rm	1	Free	4-5

Note: compiled based on the expert survey.

Table 3
Comparing the capabilities of video editors

Based on the results of the comparative analysis, most experts recommended the Sony Vegas Pro software. It is used mainly by installation specialists since it has a large number of professional capabilities. However, according to experts, the program interface is quite convenient for any user. Sony Vegas works with almost any audio and video files, which is its big plus. One can also highlight the possibility of creating videos in almost any format with the possibility of additional installation of the necessary video codecs.

Windows Story Remix, an updated version of Windows Movie Maker, came second in expert preferences. This software is a universal tool for creating and editing video recordings, visually enriched content. It lets the user work both independently and jointly with other participants in the educational process. It supports the functions of comments and annotations, transitions, special effects and filters, import of 3D-images, etc.

Discussion

Based on the results of the study, the experts concluded that at the moment, should one want to create video courses, one does not need a video camera on hand to record the working material and then mount the educational video. One can simply use special software to capture video from the screen.

The experts noted that the choice of tools that could be used to create video courses depended solely on the concept of convenience and capabilities of a computer system. Another important component of the choice of software is the feasibility of using paid versions. Of course, software products distributed on a free basis may have some restrictions, such as a limited video recording time, fixed file size, inability to change the video format, and the like. However, among the free software products, one can find the option that will most likely satisfy one's needs.

Speaking about the inclusion of the developed video courses in the curriculum, experts paid special attention to support technologies that provided equal educational opportunities for people with PD. Realizing the importance of taking into account the individual characteristics of each student, the experts noted that ensuring equal opportunities for learning for each individual, regardless of their psychophysical characteristics, was based on three basic principles: attraction, presentation, and demonstration (Table 4).

Principles	Attraction	Presentation	Demonstration
Result	Purposeful, motivated students	Competent students who can use various resources situationally	Strategically-oriented, goal-oriented students
Means	Adaptive means of attraction (stimulating interest and motivation to learn)	Adaptive means of presentation (presentation of educational material in different formats)	Adaptive demonstration tools (providing an opportunity to demonstrate learning achievements in different ways)

Note: compiled based on the expert survey.

Table 4
Basics of curriculum development

Further, the experts listed available software products for attracting school/college students to their studies, presenting educational material and demonstrating educational achievements, which participants can use to attest to the degree that they have mastered the material.

Means for attracting school/college students to study and network communication (networking) include the tools, the introduction of which allows attracting participants to group interaction, collaboration, project work, joint search for solutions to problem problems, etc.

According to the experts, these tools include:

- cloud-based storages (Google Drive, Dropbox, OneDrive, etc.), i. e. services, the use of which provides affordable collaboration, communication, and interaction, as well as joint creation, storage, editing, and exchange of documents of various formats, distributed in time and space;

- Nearpod, an online platform that provides the ability to create presentations and add various content (video, audio, images), as well as tasks (choosing one correct answer, choosing several answers and open-ended questions, and writing pieces of text). The teacher can track student activities online (in-class or remotely);

- Pear Deck, a browser application that syncs with a Google drive and allows one to conduct interactive classes using the materials on it. The teacher can upload a presentation of any format and content to the application. Students join an active session through their Google accounts. The advantage of the application is that it allows the teacher to immediately receive a backlash during an active session. Using the Quick Question tools, you can ask audience questions in real-time: as simple questions (for example, about the readiness of school/college students to move on), as well as quizzes, or a request to indicate something on the selected slide.

Speaking about the means for presenting educational material, the experts note that the presentation of didactic material exclusively in written and printed format is replaced by a multimedia format that allows diversifying the ways of presenting educational information, taking into account the individual needs of individual students.

According to the experts, these tools include:

- OneNote Web Clipper, an add-in that allows one to take snapshots (screenshots) of the entire web page or its part, open them in OneNote and save them for future work. The user can view any stored data (images, PDF files, videos, visual bookmarks of pages, etc.) on any computer-oriented tool, even without a network connection;

- VoiceOver, a technology built into the iOS operating system, designed to simplify the work of users with visual impairments. It voices the data displayed on the screen of a computer-oriented tool, in windows and/or documents. When connecting a braille display, the program transmits information using Braille;

- TalkBack, an add-on similar to VoiceOver, but developed for Android. It does not contain the Braille support function, which, however, can be connected by additionally installing the BrailleBack application;

- Announcify, an application for the Android OS, but it is also available as an extension for the Google Chrome browser. The program voices the content of any website. Besides, it allows one to expand the text of the web page by removing content from the sidebars. It is a convenient tool both for the user with visual impairments and for those who seek to save time and/or give their eyes a rest;

- TextHelp Read & Write, an add-on for Chrome OS, which provides a wide range of functionality, such as text-to-speech translation, standard translation, a picture dictionary (a dictionary that explains terms through pictures, illustrations, images),

highlighting of individual fragments, etc. It syncs with Google Drive, Google Docs, Google Slides, pdf, and ePubs.

Speaking about means for demonstrating educational achievements, the experts note that school/college students who have problems with writing or expressing their thoughts in connection with functional impairments can show their educational achievements in an alternative way.

According to the experts, these tools include:

- Clips, a service for creating short videos. Due to their small volumes, these videos can be easily shared via electronic social networks and email services. The option to add subtitles is provided. The service is developed for iOS;

- iMovie, a service for creating and editing short films by adding videos, photos, music, and voiceover. The service is developed for iOS;

- AudioBoo, a service that allows the user to record audio podcasts online, share them on electronic social networks, embed them in one's blogs, distance learning courses, etc. Using the free version, one can create an unlimited number of podcasts lasting up to 3 minutes;

- Google Keep, a free service for creating, editing, and storing notes, adding text (printing or voice typing) and images. It allows school/college students to have constant online access (subject to the availability of a computer-oriented tool with an Internet connection) to their notes, comments, and reminders;

- OneNote, a cloud-based application designed to create notes and organize personal information. It resembles a regular stationery notepad, but with the ability to add data in various formats (images, audio, video, etc.). Using this tool, one can organize both independent and group work. In this case, the teacher can see the contribution of each school/college student in a joint project, which ensures the objectivity and transparency of the assessment.

Assistive technologies (AT) are viewed by the experts as a separate subgroup of ICT. In a general sense, these are technologies, the use of which provides support for certain types of activities for individuals with PD. According to experts, AT represent a wide range of tools, strategies, and services that meet individual needs, capabilities, and tasks of a person and include an assessment of the needs of a person with PD, a functional assessment of the environment in which it is located, as well as selection, design, configuration, adaptation, use, maintenance, repair, and/or replacement of AT services, their coordination with educational and rehabilitation plans and programs for comprehensive development and full inclusion.

According to the experts, as a result of the pedagogically expedient implementation of AT in the educational process of inclusive classes/groups, school/college students can complete educational tasks with a greater degree of independence, making a less extra effort. Table 5 shows examples of AT tools recommended by the experts to support various types of educational activities.

Scope of application	of AT tools	Expediency of application in an inclusive class/group for students
Reading	E-books, audiobooks, smart text input services, etc.	having difficulties with reading and understanding the written text
Writing	Templates, word processors and editors, spelling, and grammar checking services, adapted documents, etc.	having difficulties with writing and grammar
Vision	Screen magnifier, screen player (service for recording data from the screen), recording lectures/lessons, etc.	visually impaired
Hearing	Hearing aids, signal devices, subtitles, etc.	hearing impaired
Computer access	Predictive typing functions, alternative keyboards, optoelectronic manipulators, voice recognition systems, etc.	having difficulties with using the computer in the usual way and completing educational tasks
Alternative communication	Speech synthesis tools for printing, communication panels, eye tracking technologies, voice input devices, etc.	having problems with understanding speech and/or expressing their thoughts, delayed speech development

Note: compiled based on the expert survey.

Table 5
Examples of the use of AT in inclusive education

Among the main requirements for AT, the experts note the following:

1. They should meet user needs. AT must be compatible with the tasks that the users have to face, as well as with their emotional needs, lifestyle, and local culture. These devices should be convenient and easy to use, safe, and resistant to failures and breakdowns.

2. Affordable price and ease of purchase. The affordable price of AT should be among the priorities in their development since many people with PD have a low level of income. It is also advisable to involve government and public organizations in the purchase of such devices for further use on a free basis or at reduced rates. When designing an AT, it is important to minimize the risks of failures and breakdowns to prevent the costs of their maintenance and repair, and to ensure reliable operation and long service life.

3. Ease of use. The AT operating instructions must be accessible and understandable for every user who does not have proper technical training. Using them should not involve preliminary training, the formation of additional skills, etc. AT should also be portable and light.

Conclusions

Access to educational resources, a general education program, assistive tools, and necessary support services can help individuals with PD receive education at the same level as their peers in "normal" educational settings, successfully overcoming barriers that previously prevented equal access to quality educational services.

Requirements for the quality of educational resources are constantly growing. The choice of tools and technologies to be used to achieve a better pedagogical effect, improve learning outcomes, more fully realize the potential use of ICT tools, simplify

access to the necessary data and services, and meet the needs of each user, remains an open question. Taking this into account, the problems of designing, implementing, and using ICT in support of inclusive learning require further study both in terms of determining the best ways to improve the quality of these tools and monitoring their availability, reliability, and effectiveness. Modern technological developments offer a wide array of alternative solutions for the subjects of the educational process, allow one to implement the main principles of education of persons with PD (attraction, presentation, demonstration), design educational environments based on the principles of adaptability, variability, openness, and accessibility for each student, regardless of their characteristics. Recently, there has been a significant increase in interest in such a form of training as a video lesson. This has led to competition between software products that serve to create and edit videos. As a result, the availability and ease of use of this type of software have increased significantly. Using software for recording video from the monitor screen and video editor, as well as additional specialized programs, one can easily create a video course that will serve as a good tool for self-education. We consider the development of step-by-step guidelines for creating training video courses using the proposed software products as prospects for further research.

References

Journal articles

Ahmad, F. K. "Use of Assistive Technology in Inclusive Education: Making Room for Diverse Learning Needs". *Transcience*, Vol: 6 num 2 (2015): 62-77.

Ainscow, M. y Sandill, A. "Developing inclusive education systems: the role of organisational cultures and leadership". *International Journal of Inclusive Education*, Vol: 14 num 4 (2010): 401-416.

Arzumanova, N. V. "Ispolzovanie sovremennykh informatsionnykh tekhnologii v obrazovatel'nom protsesse". *Izvestiya RGPU im. A.I. Gertsena*, num 113 (2009): 86-90.

Beacham, N. y McIntosh, K. "Student teachers' attitudes and beliefs towards using ICT within inclusive education and practice". *Journal of Research in Special Educational Needs*, Vol: 14 num 3 (2014): 180-191.

Bjekić, D.; Obradović, S.; Vučetić, M. y Bojović, M. "E-teacher in Inclusive e-education for Students with Specific Learning Disabilities". *Procedia - Social and Behavioral Sciences*, num 128 (2014): 128-133.

Florian, L. "Special or inclusive education: future trends". *British Journal of Special Education*, Vol: 35 num 4" (2008): 202-208.

Goncharenko, E. G. y Polovinkina, A. A. "Osobennosti primeneniya informatsionno-kommunikatsionnykh tekhnologii v inklyuzivnom obrazovanii". *Sotsialno-pedagogicheskaya podderzhka lits s ogranichennymi vozmozhnostyami zdorovya: teoriya i praktika*. Part 1, Yalta, Moscow. 2015. 61-67.

Goncharova, N. A.; Goncharova, M. A. y Fandeeva, D. A. "Informatsionnye i kommunikatsionnye tekhnologii v razvitiu inklyuzivnogo obrazovaniya v novykh sotsialno-ekonomicheskikh usloviyakh". *Nauchnyi almanakh*, num 11-2 Vol: 13 (2015): 104-107.

Hitchcock, C. y Stahl, S. "Assistive Technology, Universal Design, Universal Design for Learning: Improved Learning Opportunities". *Journal of Special Education Technology*, Vol: 18 num 4 (2003): 45-52.

Khizhnyak, L. A. "Inklyuzivnoe obrazovanie lits s ogranichennymi vozmozhnostyami zdorovya". *Bulletin of Moscow State Regional University*, num 2 (2015): 1-6.

Osmuk, L. A. "Obrazovatelnye potrebnosti uchashchikhsya s ogranichennymi vozmozhnostyami zdorovya". *Vysshee obrazovanie v Rossii*, num 12 (2010): 137-143.

Pérez, A. G. "Characterization of Inclusive Practices in Schools with Education Technology". *Procedia - Social and Behavioral Sciences*, num 132 (2014): 357-363.

Pivik, J. y McComas, J. "Laflamme M. Barriers and Facilitators to Inclusive Education". *Exceptional Children*, Vol: 69 num 1 (2002): 97-107.

Internet Publications

Alekseeva, L. L. y Belov, D. I. "Painting teaching and artistic development of schoolchildren". *Espacios*, Vol: 39 num 21 (2018): 2.

Kupriyanova, L. M.; Albov, A. P.; Kairova, A. I.; Andrianova, V. V. y Nikonovich, S. L. "Work Improvement of Customs Authorities in The Context of Creating A Favorable Environment for People with Disabilities: Legal Aspect". *Revista Inclusiones*, Vol: 7 (2020): 347-357.

Muhammad, L. P.; Persiyanova, S. G.; Karadzhev, B. I. y Levina, V. N. "Teaching foreign students to develop a monologic discourse based on cataphoric means". *Amazonia investiga*, num 8 Vol: 23 (2019):17-26.

Petrova, S. M. y Zhondorova, G. E. "Graphic and symbolic teaching the Russian language to foreigners as the basis of linguodidactic resource "Russian philology in the Russian northeast and APR countries (China, Korea, Mongolia, Japan)". *Espacios*, Vol: 39 num 29 (2018): 11.

Rodinova, N.; Romagna, I.; Ostroukhov, V.; Bereznyakovsky, V. y Grunina, A. "Improvement of Universities' Competitiveness: Attraction of Non-State Funds". *Revista Inclusiones*, Vol: 7 (2020): 154-160.

Simpson, J. "Inclusive Information and Communication Technologies for People with Disabilities". *Disability Studies Quarterly*, Vol: 29 num 1 (2009) Available at: <https://dsq-sds.org/article/view/167/167>

CUADERNOS DE SOFÍA

EDITORIAL

Las opiniones, análisis y conclusiones del autor son de su responsabilidad y no necesariamente reflejan el pensamiento de **Revista Inclusiones**.

La reproducción parcial y/o total de este artículo debe hacerse con permiso de **Revista Inclusiones**.

DR. (C) DIANA ARKAD'EVNA DENISOVA / DR. (C) NATALIA GENNADYEVNA LEVANOVA
PH. D. (C) OLEG MIKHAILOVICH TOLMACHEV / PH. D. (C) EKATERINA DMITRIEVNA DOBROVA