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Benefits of the use of ICTs to achieve significant learning in students with NEAE

Benefícios do uso das TIC para alcançar uma aprendizagem significativa em alunos com NEAE

Beneficios del uso de las TICs para lograr aprendizajes significativos en estudiantes con NEAE

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ABSTRACT

The objective is to determine the benefits of the use of ICTs as a teacher's resource to achieve significant learning in students with NEAE of the School of Basic Education "18 de Noviembre" of Loja. The use of a mixed methodology is proposed, which adopts quantitative and qualitative approaches, which obeys the action research line. The sample is made up of 30 teachers who provide information on the subject in a validated questionnaire, then the application of the instruments was carried out with the proposed sample. At the end of this theoretical study we conclude that, initially, teachers do not integrate ICTs in the classroom, however, later it was observed that the correct integration of ICT tools in the classroom allows students to achieve better grades in the different activities. , but there are still drawbacks such as lack of teacher training, inadequate infrastructure, and resistance to the use of ICTs.

Keywords: learning, ICTs, teachers, students, specific needs, NEAE students.

RESUMO

O objetivo é determinar os benefícios do uso das TICs como recurso do professor para alcançar uma aprendizagem significativa em alunos com NEAE da Escola de Educação Básica "18 de Noviembre" de Loja. Propõe-se a utilização de uma metodologia mista, que adota abordagens quantitativas e qualitativas, que obedece à linha de pesquisa-ação. A amostra é composta por 30 professores que fornecem informações sobre o assunto em um questionário validado, então a aplicação dos instrumentos foi realizada com a amostra proposta. No final deste estudo teórico concluímos que, inicialmente, os professores não integram as TIC na sala de aula, no entanto, posteriormente observou-se que a correta integração das ferramentas TIC na sala de aula permite aos alunos obter melhores notas nas diferentes atividades. mas ainda existem desvantagens como falta de capacitação dos professores, infraestrutura inadequada e resistência ao uso das TICs.

Palabras clave: aprendizagem, TICs, professores, alunos, necessidades específicas, alunos do NEAE.

RESUMEN

El objetivo es determinar los beneficios del uso de las TICs como recurso del docente para alcanzar aprendizajes significativos en estudiantes con NEAE de La Escuela de Educación Básica "18 de Noviembre" de Loja. Se propone el empleo de una metodología mixta qué adopta planteamientos de tipo cuantitativo y cualitativo, que obedece a la línea de investigación acción. La muestra se compone de 30 profesores que aportan información sobre el tema en un cuestionario validado, seguidamente la aplicación de los instrumentos se llevó con la muestra propuesta. Al final de este estudio teórico concluimos que, en un inicio los docentes no integran las TICs en el aula, sin embargo, posteriormente se observó que la integración correcta de las herramientas TICs en el aula permite que los estudiantes alcancen mejores calificaciones en las distintas actividades, pero aún existen inconvenientes como falta de formación al profesorado, infraestructura no adecuada, y resistencia al uso de TICs.

Palavras-chave: aprendizaje, TICs, profesorado, estudiantes, necesidades específicas, estudiantes NEAE.

INTRODUCTION

The educational institution is the first place where the student develops his potential and difficulties. The improvement of the difficulties and the evolution of their potential will depend to a large extent on the teacher and the strategies that he uses in the classroom.

In this context, Rodríguez (2004) argues that the evolution of education has allowed it to go from mechanical learning where the student memorized the contents created by the teacher, to reflective and experimental learning in which the student learns and produces new knowledge based on previous experience critically analyzed.

In order to achieve this evolutionary concretion of education and the student can develop their cognitive abilities, the guidance and mediation of the teacher is of vital importance to guarantee the quality of the knowledge acquired and inclusion, since it is in the classroom where respect is reinforced. to diversity and social commitment.

In the inclusive field we are going to refer to students with Specific Educational Support Needs (hereinafter NEAE) and the work of the teacher to achieve meaningful learning in them; considering that the success of inclusive education is determined by the responsible, ethical and committed work of the educator.

The term NEAE is defined by Mónico, Pérez, Areces, Rodríguez and García (2017) as a set of aptitudes that include students with special educational needs, specific learning difficulties, high intellectual abilities, late entry into the educational system, history harmful school and any condition that causes the student body to require attention other than ordinary.

To complement what was mentioned above, it agrees with the opinion of Zappalá, Köppel and Suchodolski (2011) who clearly state that, if the teacher is aware that learning does not occur in the same way in the student body, they must use different didactic tools, which help nurture this variety of talents. In this sense, we could consider Information and Communication Technologies (hereinafter ICTs) as a very favorable instrument to improve the cognitive development of students with NEAE.

According to Raposo and Salgado (2015), ICTs have currently caused a valuable transformation in all social spheres, especially in the educational field, benefiting the individual needs of students and providing an adaptable system that supports them according to their qualities.

"One of the main advantages of technological resources is that they can respond to diversity because they have the ability to adapt to the demands of each person, reducing differences, facilitating access to the curriculum or interpersonal communication for those who have the most difficulties to do so. . At the same time, they are a privileged instrument to promote equal opportunities among those who have learning difficulties or suffer situations of disability or disadvantage" (Raposo and Salgado, 2015, p. 123).

LITERATURE REVIEW

In a diverse classroom in which the teacher must provide a comprehensive education to all his students, it is necessary to use resources that allow him to guarantee the acquisition of significant learning in them. Among these resources we can consider Information and Communication Technologies (hereinafter ICTs), due to their adaptation to various educational contexts.

Next, an expanded vision of ICTs and their use in the classroom with students who present Specific Educational Support Needs (hereinafter NEAE) is presented.

Specific Educational Support Needs (NEAE)

Social diversity invites us to reflect on the educational change that must be carried out in a society, this change must include a transition both in the way of teaching and in the resources to be used, this guarantees authentic inclusion.

Cejudo and Corchuelo (2018) mention that students with NEAE are those who require specific educational support other than ordinary throughout their studies, due to their different physical, mental, cognitive, sensory abilities or serious behavioral disorders.

For these authors, the participation of the family, teachers and the educational center in the development of skills of those who suffer from this type of disorder is important; for which they must consider their qualities in order to meet their needs. Against this, they present the following classification of these disorders, see Table 1.

Table 1. NEAE student classification of the Instructions of March 8, 2017

1. STUDENTS WITH SPECIAL EDUCATIONAL NEEDS (SEN)	
1.1. Severe developmental disorders	Severe/profound developmental delays. Serious language development disorders. Serious disorders of psychomotor development.
Visual disability	Low vision Blindness
Intellectual disability	Mild Intellectual Disability. Moderate Intellectual Disability. Serious Intellectual Disability. Profound Intellectual Disability.
Hearing impairment	Hearing loss Deafness
Communication disorders	Aphasias Specific Language Disorders: expressive, mixed and semantic-pragmatic. Speech disorders: dysarthria, dysglossia and dysphemia.
Physical disability	Lesions of brain origin. Injuries of spinal cord origin. Injuries to the osteoarticular system. Neuromuscular disorders.
Autism Spectrum Disorders	Autism Asperger syndrome Rett syndrome Childhood disintegrative disorder Pervasive developmental disorder not otherwise specified.
Serious conduct disorders	Conduct disorder Oppositional Defiant Disorder. Unspecified disruptive behavior disorder.
Attention Deficit Hyperactivity Disorder (TDAH)	ADHD: predominance of attention deficit. ADHD: predominance of impulsivity-hyperactivity.TDAH: tipo combinado.
Other mental disorders	
Rare and chronic diseases	
STUDENTS WITH LEARNING DIFFICULTIES (DI)	
Specific learning difficulty	Specific difficulty in learning to read or dyslexia. Specific learning difficulty in writing or dysgraphia. Specific learning difficulty in writing or dysorthography. Specific learning difficulty in calculus or dyscalculia.
Learning difficulty due to language delay	
Learning difficulty due to borderline intellectual capacity.	
Learning difficulties derived from Attention Deficit Disorder with or without Hyperactivity	
STUDENTS WITH HIGH INTELLECTUAL ABILITIES (ACI).	
Intellectual giftedness.	
Complex talent.	
Simple talent.	
STUDENTS WHO REQUIRE COMPENSATORY ACTIONS (ACC)	

Note: source: taken from Cejudo and Corchuleo (2018)

Those involved in the training of students who present the aforementioned needs must consider the difficulties that each one presents, in order to provide the required support.

Information and communication technologies (ICTs)

Humanity since its origins has sought the way to expand its knowledge and transmit it to its peers, so that it remains in time as an endless means to obtain wisdom. Cultural and scientific manifestations, as well as technological advances are the result of this endless search for communication that has led to the discovery or invention of means to record these advances.

Since ancient times and gradually, technological advances have facilitated the transmission of knowledge and its access mainly through written media, the invention of the book was a giant step in the development of societies, as noted by Borges Chamorro & Vizoso (2014). When the book became an everyday object among the people, it was possible for knowledge to leave the elites and settle in the great masses.

Especially in the last decades, information technology has experienced an enormous change, the transmission of information encoded in data, has revolutionized education, and access to knowledge, thus giving way to the appearance of platforms such as the network through which ICTs They constitute an important pillar of development.

The last 30 years have been characterized by an exponential increase in communications, where three very similar terms appear in common use, but different when analyzing their function, these are; Network, Internet and Web. While the first allows communication to be established between different common devices (computers, modems, switches, routers, and others), the second is a communication protocol (TCP/IP, WAP, WiFi, among others) and the third is document pages and hypertexts. or hypermedia written in different languages (html, php, among others) accessible through the internet protocol. (Calandra Bustos & Araya Arraño, 2009, p. 23)

In this way we can see that ICTs since its birth in antiquity, is intimately combined with knowledge and its record to share it with society. The impact of technological advances evolve comparably with education, where ICTs constitute an important pillar in the advancement of students.

There are various concepts of ICTs, the opinions of some authors in this regard are cited below.

García (2014) mentions that ICTs are a set of tools that allow processing, storing, synthesizing, retrieving and presenting information in a diverse way, which is why they have become an important part of our lives.

Ávila Díaz raises the concept of ICTs as technological supports that allow "the acquisition, production, storage, treatment, communication, registration and presentation of information" (2012)

Meanwhile, Cabero (1998) defines ICTs as devices, devices, tools and electronic units that allow managing the information of any organization and that revolve around three basic media: computing, microelectronics and telecommunications.

Also, he attributes the following characteristics to them, making a compilation of other authors:

- Immateriality
- Interactivity
- Interconnection
- Instant
- High image and sound quality parameters
- Digitization
- Greater influence on the processes than on the products.
- Penetration in all sectors (cultural, economic, educational, industrial
- Innovation
- Trend towards automation.
- Diversity

If we look around us, we will find that ICTs can be used in different activities of our daily lives, thus coinciding with the conceptualization of Marqués (2012), who maintains that ICTs help us develop physical and intellectual capacities and the possibilities to develop socially. In addition, this author maintains that the definition of ICTs not only covers "informatics, telematics and multimedia"; but also to all kinds of media, for which we can say that ICTs cover a set of technologies deployed for the exchange of informative data, sent from a sender to a receiver, according to Fernández Batanero & Rodríguez-Martín (2017). , its field of action covers information storage and processing technologies.

METHODS

This research has a qualitative and quantitative methodological application, with research techniques used to put into practice the proposed objectives. The sample was oriented in thirty teachers for the execution of the questionnaire. For data analysis, frequency tables and statistical graphs were inserted synchronized with Microsoft Excel, so that a clear appreciation can be maintained as a result of the execution of the questionnaire. In addition, version 24 of SPSS was obtained to carry out

the contrasts of means through a student test.

RESULTS

According to the techniques and instruments used in this research to collect the data, we have the following results:

Question 1. Do you use ICT tools in the classroom?

Table 2. ICT tools in the classroom

Variable	F	%
Yes	18	60
No	12	40
TOTAL	30	100

Note: source: Own elaboration

According to the questionnaire made to the sample of 30 teachers from the "18 de Noviembre" School of Basic Education, 60% corresponding to 18 teachers use ICT tools in the classroom, while 40% corresponding to 12 teachers do not, as observed. in Table 2.

Question 2. If you do not use ICT tools in the classroom, why do you prefer not to use them?

Table 3. Does not use ICTs in the classroom

Variable	**F**	**%**
Does not know its management	3	25
You don't consider them important	2	16,665
Because there are no technological resources in the classroom	5	41,67
Lack of time	2	16,6
TOTAL	12	100

Note: source: Own elaboration.

According to the questionnaire applied, it is observed that of the total of 30 teachers surveyed, 18 (60%) use ICT tools in the classroom, while 12 (40%) do not see Table 2. The reasons why they do not use these resources are distributed as follows: 3 are unaware of their management, 2 consider that they are not important, 5 mention that the institution does not have these tools and 2 do not resort to this type of resources due to lack of time.

Question 3 What ICT tools do you frequently use in the classroom?

Table 4. Frequently used ICT tools

Variable	**F**	**%**
Power Point	10	33,33
Canva	7	23,33
Kahoot	2	6,67
Genial.ly	4	13,34
Camtasia	0	0
Goconqr	2	6,67
Piktochart	2	6,67
Qr codes	3	10
Socrative	0	0
other	0	0
TOTAL	30	100

Note: source: Own elaboration

The questionnaire applied to the teachers that make up the sample reveals that the ICT tools that are most used in the classroom are: Power point whose usefulness is 38%, canvas used by 26%, Kahoot by 5%, genial.ly whose utilization is 4%, , Goconqr 8%, piktochart 8%, Qr Codes 11%, while camtasia, socrative and others at 0% see Table 4.

Question 4

Do you consider that the use of ICT tools in the classroom provides benefits for students with NEAE?

Table 5. Benefits of ICTs in NEAE students.

Variable	F	%
Yes	18	60
No	12	40
TOTAL	30	100

Note: source: Own elaboration.

Of the 30 teachers surveyed, 18 consider that the use of ICT tools in the classroom benefits students with NEAE, while 12 consider that their use is not beneficial in students with NEAE, see Table 5.

Question 5

What benefits do you consider that the use of ICT tools provides to students with NEAE?

Table 6. Benefits of ICTs in NEAE students

Variable	F	%
Improve academic performance	10	55,55
Facilitates understanding of content	4	22,23
Encourages student attention	2	11,11
Enhances concentration	2	11,11
TOTAL	18	100

Note: source: Own elaboration.

The questionnaire applied to teachers shows us that 12 consider that ICTs do not provide benefits to students with NEAE, while 18 teachers believe the opposite, giving us the following percentages: 56% performance improvement, 22% content comprehension, 11% improvement the attention of the students and 11% help the concentration of the students with NEAE see Table 6.

Analysis of results in the qualifications of the students with whom ICT tools were used and with those who did not.

Table 7. Analysis of qualification results

Variable	Use of Technological Tools	%
10 – 8,5	yes	60%
7 – 8,4	No	40%

Note: source: Own elaboration.

Table 7 shows that the students with whom the 18 teachers used ICT tools in the teaching-learning process obtained an academic performance that fluctuated between 8.5 to 10 points, while the performance of the students whose 12 teachers did not use ICT resources in the classroom fluctuates between 7 and 8.4 points. This clearly shows us that it is important to use ICT resources to guarantee significant learning in the classroom, information in a general way that can be seen in Table 8

below. In addition, we carry out a contrast of means using the student t test to verify that there are indeed significant differences in the grades of students whose teachers use ICTs and those who do not use ICTs. The results of the contrast show us significant differences between both groups (t=10.912; p=0.000) see Table 8.

Table 8. Group Statistics

STUDENTS WHO USE ICT	
NUMBER OF STUDENTS	30
Men	16
WOMEN	14
AGES BETWEEN	BETWEEN 6 TO 11 YEARS
COURSE	BETWEEN 2nd TO 7th YEARS OF EGB
HALF	9,1317
STANDARD DEVIATION	,47751
MEAN OF STANDARD E	,08718
STUDENTS WHO DO NOT USE ICT	
NUMBER OF STUDENTS	30
Men	19
WOMEN	11
AGES BETWEEN	ENTRE 6 A 11 AÑOS
COURSE	ENTRE 2° A 7° AÑOS DE EGB
HALF	7,8167
STANDARD DEVIATION	,45568
MEAN OF STANDARD E	,08320

Note: Own elaboration.

Table 9. Ratings

	STUDENT GRADES	
	Students who use tics	**Students who do not use tics**
1	8.8	8
2	9.3	8.2
3	9.25	7.3
4	10	7.9
5	9	8.1
6	8.7	8
7	9.6	8
8	9	8
9	9	8.4
10	9.5	7
11	8.5	7.9
12	8.7	7.6
13	9.3	7.3
14	9.8	8.1
15	8.7	8.3
16	10	8
17	8.7	7.5
18	8.5	7.3
19	9.5	7.9
20	8.8	8.4
21	9.5	7.3
22	10	8
23	9	8.1
24	8.5	7
25	9.6	8.4
26	8.7	8.4
27	8.5	8.1
28	9.5	7.9
29	9	7
30	9	7.1
Half	9,3333333	8
Desv. Esta.	0,5	0,5

Finally, we can observe in the previous tables, how the students who used ICTs improved their grades, although their improvement was not very significant.

FINAL CONSIDERATIONS

From the elaboration of this work, the following can be concluded:

• Teachers who do not integrate ICTs in the classroom mainly do so due to lack of knowledge about how to use them. Given this, it is necessary to train them to acquire the necessary skills that allow them to make proper use of ICTs in the teaching-learning process.

• The correct integration of ICT tools in the classroom allows students to achieve better grades in different activities. Given this, the proposed hypothesis is verified, highlighting the benefits that ICTs provide in the acquisition of significant learning in children with NEAE.

• The success of using ICT tools in the classroom starts from knowing how to choose the right ones for what you want to do, knowing how to use them correctly, knowing how to integrate them and how to adapt them to the topic that is going to be taught.

• Students whose teachers use ICTs have better academic performance than those whose teachers do not use ICTs.

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C. elaboration of figures and tables:	25%	25%	25%	25%
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