ICT for educational leadership in secondary special education schools in Greece in a multicultural environment

Koniari Dimitra
Teacher of Greek philology in united special vocational secondary education school of Larissa
demyapr81@gmail.com

Prendes-Espinosa, M. Paz
Professor of Educational Technology, University of Murcia
pazprend@um.es

Sanchez Vera, Maria Del Mar
Lecturer in Educational Technology, University of Murcia
mmarsanchez@um.es

Summary

In our days, the age of digitalization, as the digital technologies have become a vital part of the everyday work, principals of special secondary education schools with immigrant students with SEN face new challenges and are forced to transform their previous educational and administrational practices improving their digital competences in their administrative issues. Especially, this present research is focused on the digital competence of principals of special secondary education schools with immigrant students with SEN in Greece. It is a quantitative research in which it has been used the questionnaire in order to measure the extend of digital competence of principals. After the statistical analysis of the data it has emerged, firstly medium level of digital competence of these principals and, secondly, the need for further training and technical support. Of course, issues that could be the subject of future researches came in the surface.

Keywords: special education, multiculturalism, principal, digital competence

Abbreviations: EU- European union, ICT- information and communication technologies, SEN- Special education needs

Introduction

The digital world is an indelible part of our modern life (Jackman, et al, 2021). The administration of today's special secondary schools with immigrant students with SEN has as its main objective the proper and effective function of the school unit both in its internal context and in the wider social context in which it is a part of. In the modern environment of the technological explosion of information and communications, special secondary schools with immigrant students with SEN, and especially, each principal of these could not be an observer, but principals must integrate and exploit ICT as well as their digital competence in their daily administrative practice(Giddens, 2006) .

As Καπαχτσή and Τσιμπλίδου (2009) mention, the attitudes of principals play a crucial role in the integration of ICT in schools and in the promotion into a modern and effective organization. Principals are required to act as technology leaders and teachers as facilitators, to provide the skills and knowledge for the 21st century education (Roblyer & Doering, 2014). The role of the principal is very important for this as principal can instil in the other members the vision for the success of the education (Φακουρέλη, Σ. & Ντεροπούλου- Ντέρου, 2013).

Framework of students with special educational needs

The EU has made some efforts to improve the living conditions of special people and to ensure equal rights for every people with disability since 1980s. From all the legislative tools it is worth mentioning the year 2003 as the Year of Persons with Disabilities (Kottas, 2020).

In students with SEN is included a broad range of students with varying cognitive, physical, emotional, and behavioural learning needs which has a result these students to be underperformed and are restricted from daily educational and social activities (Kang & Martin, 2018; Kasturiarachchi, 2020).

According to Greek Law 3699/2008 (Chapter A, Article 1), special education and training is the set of educational services provided to students with disabilities and identified special educational needs. In addition, special education means specially designed instruction supported by special support services programs and can be provided in properly configured and equipped spaces using specialized tools and methods to meet the specific needs of the child, provided within the usual classroom or provided that it does not meet the needs of the student within a department that operates in the general school, hospital, home or elsewhere for as long as continuous assessment is provided of the child (Πολυχρονοπούλου, 2012).

Framework of multiculturalism

Nowadays the number of migrants is being significantly increased in many places around the globe and as a result principals have to face different students in terms of language, cultural, values, knowledge and capacities (Ariza et al, 2017).

The multicultural education is a broad concept as have to follow a process in order to deliver basic educational concepts, suitable to all students (Alghamdi, 2017). The multicultural education respects the principles, values and practices of every person and is linked to social justice (Shannon- Baker, 2018). Especially, multicultural education is not a series of strategies or curriculum content but is, in addition, a struggle for the definition of the purposes of education in an unequal world (Sleeter, 2018).

In today's digitalization world people of different cultures communicate without obstacles. Students and teachers activities can participate in all educational practices around the world. In this framework, teachers and principals of schools must have a positive attitude towards multicultural education, respecting the different cultures of everyone in order to ensure equality opportunities in education without discrimination of religion, language and race through the designation of appropriate educational programs and teaching methods (Dewy, et all, 2019; Karacabey, et all, 2019).

Multicultural education should be a process of a comprehensive school reform with seven basic characteristics: it is anti-racist, it is basic, it is important for all students, it is pervasive, its goal is social justice, it is a process, and it is critical pedagogy (El Ashmawi et all, 2018; Nieto, 2000).

Framework of school leadership

The School leadership is an important component for the strong performance of the school. The principals of the schools are responsible for the changing of the school culture (Anderson, 2017).

Every school principal has as obligation to promote, where it is appropriate, innovative approaches in educational institutions, in particular, recognizing and promoting the leadership potential of staff within institutions, in particular through "leadership sharing", providing opportunities to work with colleagues in other institutions and encouraging staff, offering opportunities to develop their capabilities in this area, promoting the creation of innovative teaching and learning environment, including the proper use of ICT and open educational resources both as pedagogical aids and as administrative tools, creating and maintaining networks to initiate and develop effective approaches to leadership in education institutions and promoting mutual learning among managers "(European Union, 2014:,pp: 3-4).

The continuing challenges require all school principals to adopt an open mind on the changes and advances brought by rapid development in technology (Thannimalai & Raman, 2018).

In the context of a special education school with immigrant students, principals need to play an important role, guiding and supporting teacher development, using new techniques to help these students, trying to adapt them to the new school environment. In this regard, efforts should be made in order to reach out to the families of immigrant students with special educational needs and other pupils. A positive educational climate is, after all, a motivation for learning, but also an important factor in promoting resilience. Principals should not treat students with stereotypical reactions, as they are more likely to isolate and marginalize these students (Hamilton, 2007).

Digital competence

The continuous use of digital technologies requires new skills and competencies for all the citizens and especially for the school principals (McGarr & McDonagh, 2019).

According to Digicomp 2.0 project, there has been proposed a digital competence framework which includes the following 5 key areas of competence:

- Information and data literacy
- Communication and collaboration
- Digital content creation
- Safety
- Problem solving (Vuorikari et al, 2016)

Methodology

In the present research is examined the perception of digital competence of the principals of secondary special education schools in Greece with immigrant students with SEN in relation to its contribution to the improvement of the administrative procedures. In this survey, the gender of the participants, their age, their level of education, their training in issues about ICT, special education and multiculturalism as well as the years of experience in the administration, are variables that were included in the design of this research tool (questionnaire).

The quantitative method was selected and, finally, used as it reflects the trends of individuals (Robson & McCartan, 2016). In addition, this method is proposed for those cases that are examined the relations between variables (Creswell, 2011).

As independent variables were considered the questions that are related with the demographic data of the participants and the frequency of using ICT in administration and as dependent variables, the questions about the perception of their digital competence.

Initially, the use of descriptive statistics allows the presentation of the demographic data of the research but also to give the trend that emerges from the answers to the research questions. The inductive statistical analysis was used for the better performance of the results.The results of the questionnaires were edited with the statistical program SPSS. In addition, based on the questions, where it is necessary, the related questions (thematic axes) are grouped, in order to give a more complete picture of the answers. Then, as the questions are grouped, an average is emerged which is based on the averages of the answers to the questions that are grouped individually. Having calculated the above-mentioned averages and standard deviations for each thematic axis, a conclusion is drawn about the prevailing trend in the questions that constitute it. For the purpose of this research has been made seven thematic axes.

The significance level determines the range of the area of acceptance and rejection. The level of significance is $\alpha=0.05$.

Research questions

The research questions of the survey were about the digital competence of the principals of special secondary education schools with students with SEN in a multicultural environment. Especially:

- Is there any effect between the demographic elements and the digital competence of principals of special secondary education schools with immigrant students in their management?
- In which extend does the digital competence of the principals of special secondary education schools with immigrant students affect the degree to which they use ICT in the communication?
- How does is it connected the digital competence of principals of special secondary education schools with immigrant students and the level of their self-assessment?
- How does the training on issues about ICT, special education, multiculturalism affect the digital competence of principals of special secondary education schools with immigrant students?
- In which extend does the digital competence of principals of special secondary education schools with immigrant students affect the extent to which they apply special, digital educational programs in the teaching of students with SEN in a multicultural environment?

Sample/ participants

In this research took part the principals of secondary special education schools with immigrant students with SEN in Greece. Especially, in this survey took part: 32 principals of united special vocational secondary gymnasium lyceum, 31 of united special vocational gymnasium with lyceum classes, 17 of united special vocational gymnasium, 48 of special laboratories of professional education and construction, 46 of the integration departments. The questionnaires were distributed to the principals of secondary schools of special education with immigrant students during the period May-June 2020. The number of answered questionnaires that were received was one hundred and seventy four (174).

Instrument to collect data

The tool which was used to collect data and investigate questions was the questionnaire. According to Borg & Gall (1989), the questionnaires can be used in a research in order to record the opinions, attitudes, preferences and perceptions of individuals who are the subject of a research.

The first part of the questionnaire is consisted by questions about personal information's of principals and other information's from managers such as: demographics, their knowledge of computer, data about the use of computer in their schools, information's about their training.

The second part is consisted by questions in which principals are asked to express their degree of agreement and their desire, according to Likert scale questions, in which "agreement / desire scores are presented in a continuous 5 numbers, where one end indicates an absolute agreement and the other absolute disagreement, while the intermediate number expresses the neutral position (Sarafidou, 2011). Furthermore, it was used the Likert scale (1 = not at all, 2 = A little, 3 = Medium, 4 = Much, 5 = Too Much) and also it was used categorical questions (YES-NO).

The third part is constituted by questions (Likert scale) about the degree of disagreement or agreement on the need to use ICT in specific tasks of the school administration by principals.

The last part is constituted by questions (Likert scale) about the reasons that principal don't use the ICT in the administration, as well as the factors that will push them to develop more their digital competence in their school administration and the factors of their administrative success in a special secondary education school with immigrant students with special educational needs.

The main part of the questions were closed because this type can provide useful information about what is being investigated, and it is best offered for statistical analysis, as one can distribute the people who have answered according to their answers, without having to go through from intermediate stages of analysis. Other advantages of this type of questions are that they can be understood easily and at the same time they can be easily answered, while they guarantee a relative anonymity. In addition, the closed-ended questions are useful for gathering certain categories of information and for judging the approval or disapproval of a given opinion, as well as the perceptions of the research subjects (Javeau, 2000).

Specifically, the questions that were used to identify principals' digital competence in administration are consisted mainly by regular Likert scales of five points as follows: I disagree absolutely = 1, I disagree = 2, neither agree, nor disagree = 3, I agree = 4 and I agree absolutely = 5. With the use of Likert scales, the difficulty of measuring objective attitudes can be overcomed due to the possibility of alternative answers that they are provided for the benefit of the accuracy of the information (Δημητρόπουλος, 2001).

Distribution and collection of questionnaire

The questionnaire, after being recorded in electronic form via google forms, was sent to the mails of the directors through a specific completion link and some was given to other directors in person. Personal contact was also selected in order to emphasize the importance of the research.

After, it has been done the collection of the data through the specific link, they were entered in the statistical package SPSS 17 for the social sciences (Statistical Package for the Social Sciences, SPSS-Version 17.0). With this specific program, the data of the questionnaires were analysed and processed using both descriptive -for the description, organization and presentation of some data-, as well as inductive statistics -for the control of research questions- (Ρούσσος & Τσαούσης, 2002). After the collection of the questionnaires, they were listed and before we start their codification, they were supervised (Cohen & Manion, 1994).

During the process of codification, it was given a code number for each answer to each question (Cohen & Manion, 1994).

Results

In this survey took place 174 principals of special secondary education schools with immigrant students, 88 (51%) of whom, were men and 86 (49%) were women. The most participants in the study belonged to the age group 51-60, at a rate of 53% and the smallest population in the population had a rate of 10%.

According to their level of studies, most of the participants in the research have a postgraduate specialization diploma, at a rate of 59%, while most participants work in a Special Vocational Education and Training Laboratories (49 people), a percentage of 28%.

The average number of immigrant students with special educational needs per school unit is 3.8. The most immigrants with special educational needs in a school are about 20, while there are schools without such students.

The average number of educational years of principals is 24. Most years of service are 40 and fewer 6. The average number of years of management experience is 7.6. The most years of administrative experience are 30 and the fewest, only 1.

According to the level of education, most of the participants in the research has attend special training for immigrant students with special educational needs, at a rate of 68%, and

most participants hasn't attended any special training on multicultural education, at a rate of 58%.

In this survey, the managers were asked if they have attended any special training on ICT issues. The majority of directors answered yes, at a rate of 97%. The most frequently attended training programs were the digital skills and their educational utilization, both at 28%

According to their years of experience in ICT use, the most participants seem to have more than 10 years, at a rate of 50% while the participants use ICT in the school administration very often, at a rate of 40%. Finally, in a large majority (65%), the principals consider that the ICT equipment of their school unit is not sufficient.

Firstly, it is analysed the frequency of using ICT for communication. This axis is consisted by ten sub-questions. The overall average of the axis, as it is shown in the table 1, is 2,878 and the sub-averages of the statements is ranged from 2.3 to 3.8, demonstrating a moderate influence of these statements on the frequency of use of ICT for communication. For this axis, the queries that are used were tested for their reliability using Cronbach's alpha = 0.899. It is seemed that the reliability is excellent.

Table 1: Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	2.878	2.305	3.879	1.575	1.683	.214	10
Item Variances	.915	.615	1.297	.682	2.107	.044	10

Especially, 57 principals use ICT for communication with the directorate of secondary education very much while 63 principals much. In order to communicate with the Ministry of education, principals use ICT in a medium level as well as with the director of special education and director of multicultural education. Impressive is the fact that principals use ICT little for their communication with pedagogical institute and with the municipality and very little for their communication with the teachers and families of students.

Secondly, it is analysed the digital competence of principals and its contribution to the normal function of the school unit as it is shown in the table 2. This axis is consisted of nine sub-questions. The overall average of this axis is 3,233 and the individual averages of the statements range from 2.4 to 3.9, demonstrating a moderate influence of these statements on the digital capacity and its contribution to the normal function of the school units. Especially, the questions were checked about their reliability using Cronbach's alpha = 0.902. From the following, it seems that the reliability is excellent.

Table 2: The digital competence of principals and its contribution to the normal function of the school unit

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	3.233	2.425	3.937	1.511	1.623	.219	9
Item Variances	1.157	.730	1.609	.879	2.204	.085	9

Especially, the 76 principals mentioned that they have medium digital competence towards those (16) who have very much digital competence. 50 principals mention that their digital competence helps them to apply digital educational material while 68 principals consider that the ICT helps them to organize better their administrative duties. 73 principals find necessary the ICT in the administration towards 28 who finds ICT very important in their administration.

After, it is analysed the digital competence of principals and their effectiveness in the management of school as it is shown in the table 3. This axis is consisted by twenty-one sub-

questions. The overall average of the axis is 3,703 and the sub-averages of the statements range from 2.5 to 4.5, demonstrating a moderate to very large influence of these statements on digital skills and their effectiveness in management.

Table 3: The digital competence of principals and their effectiveness in the management

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	3.703	2.511	4.529	2.017	1.803	.230	21
Item Variances	.989	.436	1.563	1.127	3.588	.071	21

The questions that are used, were checked about their reliability, using Cronbach's alpha = 0.934. From all the above it seems that the reliability is excellent.

It is worth mentioning that 103 principals want to develop more their digital competence while their digital skills help them to execute better the administration.

In addition, it is analysed the usefulness of the various possibilities of ICT in the administration of school units. This axis is consisted by fourteen individual questions. The overall average of the axis, as it is shown in the table 4, is 4.14 and the individual average of the statements is ranged from 3.3 to 4.6, demonstrating a quite large influence of these statements on the usefulness of the various ICT capabilities in the administration of the schools.

Table 4: Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	4.140	3.270	4.598	1.328	1.406	.152	14
Item Variances	.690	.392	1.055	.663	2.691	.039	14

For this question, the questions that were used, were tested for their reliability using Cronbach's alpha = 0.947. It seems that the reliability is excellent.

The sending of emails and the school computerization are the most important possibilities that are offered from the use of ICT.

Last it is analysed the factors of digital competence that contribute to the execution of the duties of principals. This axis consists six sub-questions. The overall average of the axis, as it is shown in the table 5, is 4,307 and the sub-averages of the statements is ranged from 4.1 to 4.6, demonstrating a large to large influence of these statements on the factors that contribute to the performance of the duties of directors.

Table 5: Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	4.307	4.126	4.626	.500	1.121	.034	6
Item Variances	.509	.318	.886	.568	2.788	.042	6

The questions that were used, were checked for their reliability using Cronbach's alpha = 0.725. It seems that the reliability is excellent.

Conclusions and Discussion

From the above research analysis it seems that there is a significant effect of the type of secondary special education school to the extent of digital competence of principals as well as the use of ICT necessary in their administration.

The gender doesn't seem to affect the digital competence of the principals as their extend of use ICT in administration. The value of p-value = 0.817, i.e. it is greater than the significance level α = 0.05 and therefore as it seems there is no statistically significant dependence between the two questions. That is, it is observed that there is no statistically significant effect of gender on the use of ICT in the administration.

In addition, it is examined the impact of school type on the usefulness of different ICT capabilities in school administration. Especially, the value of p-value = 0.002, i.e. it is less than the significance level α = 0.05 and therefore it seems that there is a statistically significant dependence between the two questions. It is observed that there is a statistically significant effect of the school type on the usefulness of the various ICT possibilities in the administration of the school units. For this reason comparisons are made between different schools.

In relation to the effect of gender on how ICT facilitates managers to better organize their administrative tasks it is emerged that the value of p-value = 0.296, i.e. it is greater than the significance level α = 0.05 and therefore it seems that there is no statistically significant dependence between the two questions. So, there is no statistically significant effect of gender on how much the use of ICT facilitates the organization of administrative tasks.

After it is made a check made between the type of schools and the useful of ICT in school administration. It has emerged that the value of p-value = 0.805, i.e. it is greater than the significance level α = 0.05 and therefore it seems that there is no statistically significant dependence between the two questions. So, there is no statistically significant effect of the school type on the usefulness of the various ICT possibilities in the administration of the school units.

It is observed that there is a statistically significant effect of the level of studies on the use of ICT in administration. Especially, the value of p-value = 0.00, i.e. it is less than the significance level α = 0.05 and therefore it seems that there is a statistically significant dependence between the two questions.

Those principals who have a PhD diploma have better digital competence and use more often ICT in their administration.

Furthermore, there is a statistically significant effect of the level of studies on how much the use of ICT facilitates the organization of administrative tasks. The value of p-value = 0.000 is less than the significance level α = 0.05 and therefore it seems that there is a statistically significant dependence between the two questions.

There is a statistically significant effect of the level of studies on the usefulness of the various ICT possibilities in the administration of school units. The value of p-value = 0.000, i.e. it is less than the significance level α = 0.05 and therefore it seems that there is a statistically significant dependence between the two questions.

The age group to which the managers belong is not related to their years of experience in ICT use. The value of p-value = 0.920, ie it is greater than the significance level α = 0.05 and therefore it seems that there is no statistically significant dependence between the two questions.

There is a correlation between the years of experience of the principals in the use of ICT and the adequacy of the school unit in ICT technological equipment. The value of p-value = 0.001 is less than the significance level α = 0.05 and therefore there seems to be a statistically significant dependence between the two questions.

There is a correlation between the frequency of use of ICT in management by managers and their years of experience in using computers. The value of p-value = 0.000 is less than the

significance level α = 0.05 and therefore it seems that there is a statistically significant dependence between the two questions.

The frequency of use ICT in school administration is positively related to the extent to which digital skills should be a key criterion in the selection of a manager (cor coeff: 0.460).The value of p-value = 0.000, i.e. it is less than the significance level α = 0.05 and therefore it seems that there is a statistically significant dependence between the two questions.

It has emerged that the frequency of ICT use in management is positively related to the frequency of ICT use for communication (cor coeff: 0.552).The value of p-value = 0.000, i.e. it is less than the significance level α = 0.05 and therefore it seems that there is a statistically significant dependence between the two questions.

The frequency of use of ICT in administration is positively related to the use of ICT in the teaching of students with SEN (cor coeff: 0.479).The value of p-value = 0.000, ie it is less than the significance level α = 0.05 and therefore it seems that there is a statistically significant dependence between the two questions.

The frequency of use ICT in the administration is positively related to the possibility provided by digital competence in the development of cooperation with school units of the country of origin of students (cor coeff: 0.322).The value of p-value = 0.000, ie it is less than the significance level α = 0.05 and therefore it seems that there is a statistically significant dependence between the two questions.

The more years one principal has in the use of ICT, better digital competence they have and they evaluate themselves better (cor coeff: 0.626).The value of p-value = 0.000, i.e it is less than the significance level α = 0.05 and therefore it seems that there is a statistically significant dependence between the two questions.

It is obviously that the school's principal is the most important key for the improvement of the school and its administrational efficiency (Sebastian & Allensworth, 2012). As ICT implementation in schools is still a relatively new agenda in school reform, understanding effective leadership for ICT implementation is urgently needed (Moreira et all, 2019; Yamamoto & Yamaguchi, 2019).

Dawson and Rakes (2003) referred to the fact that the integration of ICT in the learning process within the classroom is significantly influenced by the form and duration of the training that the Principals will organize for the teachers.

As the world has become digital, the school principal of a secondary special education school with immigrant students should facilitate the process of using ICT in administration and learning process (Okeke, 2019).

The positive attitudes of the principals will contribute to the cultivation of positive attitudes on the part of the teachers and then the students of the school towards the integration of ICT in the learning process (Tsoulis & Tsolakidis, 2013).

Nowadays, each effective principal of a special secondary special education school with immigrant students needs a set of specific competences in order to change him/her teaching and administration creating equal educational conditions for every student respective every one's diversity (Karacabey et. all, 2019; Redecker, 2017, p.: 15). Especially, each principal of every special education school with immigrant students should respect the diversity of each student building basic skills for the world's citizens, essential for all students, through all aspects of the education system such as building attitudes, knowledge, and skills that enable students to work for social justice (Sahal et all, 2018).

Digital competence has, nowadays, been an essential part of every education system (Park 2016). Every European citizen should have at least basic digital literacy skills in order to be able to live, share, communicate, work, learn and actively participate in a rapidly changed information society (Tsekeris, 2019).

The literature review shows that no research has been made on the role of Principal in the use of ICT in the educational process for immigrant students with special educational needs. On the contrary, there is an extensive research literature in the field of General Education.

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