

# The Benefits of Digital Literacy for Psychiatric Disease through Educational Activities


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## ABSTRACT

Democracy, equality, and inclusion require equal opportunities for everyone to have access to all types of education, in specific to ICT content. This paper intends primarily to examine whether it is feasible to teach people with mental illness to use a tablet and secondarily whether the usage of ICT contributes to the enhancement of cognitive and social skills, to the improvement of psychology, quality of life and to the increase of the functionality of these people in the context of their psychosocial recovery. The method chosen for this study is “action research”, for the needs of which an educational activity was conducted, which had a participatory, collaborative and experiential character, in an untypical learning environment, such as that of the Psychiatric Hospital of Attica (Ps.H.A.) “Dromokaiteio”. The results of this research demonstrate both that it is possible for people with mental illness to become familiar with the use of ICT through educational courses and that the influence of ICT is especially effective in enhancing factors that affect the quality of life of people with mental disorder.

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## 1. INTRODUCTION

The use of technology has come to be considered an integral part of modern society and its benefits are found in various domains of human life. However, some people have limited or zero access to it. One such population group is often people with mental disorders, who are hospitalized in long-term care in a psychiatric hospital. Their engagement with the new-generation technological means, is considered necessary, with benefits related to everyday tasks, maintaining and improving their quality of life, as new technologies support access to learning, knowledge, communication and cooperation, and are a means of increasing the level of participation of people in the community. Mental illness is a complex, undefined label and has been a cause of debate between medicine and philosophy [1]. It includes a wide range of symptoms and experiences such as mental tension, emotional instability, cognitive decline, reduced awareness of reality [2], the terminology “mental disorder” unfortunately continues to be closely associated and signified in the collective consciousness, prejudices and stereotypes, triggering dismissive behaviors that reinforce social stigma, pushing people with mental disorders to the edge, into social isolation [3], [4].

Psychosocial rehabilitation refers to people with chronic mental illness that opposes institutionalization and confinement in psychiatric hospitals [5], approaching the mentally ill person in a holistic inclusive manner, respecting their needs and wishes, with the intention of reintegrating them into society, experiencing a life of quality and dignity [6]. Therefore, psychosocial recovery approach, is a practical approach aiming at the social inclusion of the person with mental illness and his/her transition to residential and professional community mental health structures or his/her family environment tends to enhance his/her functionality, skills and consequently autonomy through educational programs carried out in psychiatric facilities. Based on an extensive literature review in both the international educational-scientific field and the domestic one, little is known about the percentages of ICT use among the psychiatric population and people with severe mental illness.

However, the effectiveness of ICT use for mental health-related causes, through the results of a specific participatory action research study, demonstrates that mental illness is not a barrier to technology use and access and that

59.3% of participants use computers, 77.3% use the internet, 92.7% have a mobile phone, 67.9% have a smartphone, and 63% use Facebook [7]. Moreover, previous studies have researched the rate of internet use in psychiatric populations and their findings indicate that between 34%–81% of patients with psychiatric diagnoses use the internet [8], [9]. Finally, Ma *et al.* [10] in their research found that ICTs have a major but challenging role in enhancing elderly people's understanding of loneliness and mental health [10].

This paper is organized into seven sections. The first chapter, "literature review", discusses the terms "adult education" and ICT. The second chapter discusses the planning of the educational intervention with an emphasis on its aim and goals. In the third chapter, an analysis of the methodology used to undertake this research is presented, with an emphasis of the necessity and importance of the research, the research issues and hypothesis and the target group. In the same chapter, are presented a full review of both the Action Research, as the method of research chosen by the researcher's team, the analytical tools used for Data Collection and the statistical analysis of the data. Following this, chapter four provides an extensive development of the results of the research, while the next chapter, chapter five, evaluates the learning process. Finally, chapter six discusses the results, while chapter seven, which is the final chapter, presents the conclusions and analysis of the study's limitations, and directions for future research.

## 2. THEORETICAL FRAMEWORK

### 2.1. Adult Education

Adult Learning offers the prospect of lifelong learning and is offered at all ages and under different states of life without ever being finished. It contributes to social inclusion, personal growth, active participation, and citizenship as well as sustainability, inclusion, and employability [11].

The task of the Adult Educator is both essential and challenging. The role of the adult educator is especially tricky when he or she is called upon to coach people who are in critical psychological distress or have disabilities. However, all people have equal rights to education. Not only to formal, education, but also, and especially, to the education that follows from the needs of the present time [12].

### 2.2. ICT

According to Solomonidou [13] ICTs constitute a set of innovative technologies that are computer-centered and have multimedia, hypermedia and telecommunications technologies. In other words, ICT's include PCs, cellular phones, cable TV, satellite television, computer networks, etc., [13]. ICT can be grouped into synchronous (chat, video conferencing, application sharing, support systems, etc.) and asynchronous (e-mail, image and sound sharing, topic banks, blogs, etc.) [14].

Their characteristic feature is that they contribute to the reorganization and radical change of the structure of all sectors involved. Consequently, ICTs have symbiotic properties and are an integral and necessary building block of every human activity [15].

## 3. PROCEDURE OF EDUCATION INTERVENTION IN PSYCHIATRIC HOSPITAL OF ATTICA "DROMOKAITEIO"

People with mental illness need to be educated in order to be able to acquire new skills, enhance their autonomy, and, consequently, achieve their reintegration into society [16]. Digital literacy helps to improve their social inclusion but also ensures an improved quality of life.

Based on the theoretical background of psychosocial rehabilitation and guided by the principles of equality and inclusion, an educational intervention was designed, organized, and implemented in a group of chronic patients hospitalized in an inpatient hospice of the Psychiatric Hospital of Attica "Dromokaiteio". This educational intervention aimed to cover the basic skills for ICT following specific steps and activities to facilitate, support, and coach the participants [17].

Developing and implementing an educational program in a non-formal educational setting was a challenge for the research team, as the educational experience is a distant memory for some, while for many others, it is completely lacking. The group of individuals who formed the members of the research team, participate in rehabilitative programs aimed at improving their functioning in areas related to self-care as well as social skills, thus setting the basis and conditions for their transition to mental health housing in the community or to "discharge procedures from hospitals" where feasible. Therefore, the acquisition of digital knowledge, as well as the cultivation and development of skills will help them in this direction, as the educational program implemented and the educational activities target the functional and health-oriented side of their personality.

The activities selected and developed by the research team were completed using Tablet, offering the possibility of familiarization with electronic devices, quick learning of handling and understanding of concepts related to the hardware-software of the devices, but also the possibility of communication and interaction between the learners, thus experiencing the sense of being a member. In addition, an attempt was made to understand the concept of the Internet, the benefits of the services it offers, and its uses in our lives.

The use of technology for people with mental disorders as an intervention and support for the process of psychosocial rehabilitation was a change in praxis. Through the educational intervention and its activities, the participants received impulses for the development of their cognitive and social skills, such as the use of applications for social communication, entertainment, and information, as well as skills in the use of tablet devices. In fact, they became co-designers in the educational process, having a voice and perspective on the content of the educational program, as the educator, creating an appropriate learning experience, and supporting and encouraging the trainers to take leadership roles.

The whole of this educational intervention was—for the period of its implementation—an orientation of a rehabilitation, anti-institutional perspective, and was based on the basis of the recognition of the person's belonging to the human being, and on the idea that all individuals are unique and that all psychiatric clients have the

opportunity to be able to be moved to community mental health housing facilities, the development of which can contribute positively to the issue of social rehabilitation. Towards this direction, the whole activities of the educational intervention-process consisting of individual thematic sections were achieved.

All the activities were carried out in a collaborative team spirit, in accordance with the principles of active and experience-based learning that allow for self-direction and the taking of decisions and initiatives by the participants, with respect to the principles of inclusion and with the involvement of ICT. The digital and printed learning documents for the individual sessions were prepared and adapted by the research team in such a way as to be accessible and comprehensible to all participants.

This educational intervention was based on the tablets, the pre-installed applications, the digital games, the projector for watching videos, and the printed booklet that was given to the participants. The aim was to create attractive attendance and staying group conditions, but also interesting tasks that are different from the usual ones, in order to create a proper basis for the educational intervention using tablets.

The educational activities implemented were aimed at gaining skills and cultivating cognitive, interpersonal, and movement skills through the use of ICT (Table I).

#### 4. METHODOLOGY OF RESEARCH

##### 4.1. Aims and Goals

This study aims to investigate whether it is achievable to train people with mental disorders to use smart devices, such as tablets. The following can be considered as partial goals of the research:

- Participants are to familiarize themselves with the new technologies in order to adapt to the new conditions of the digital world.
- Participants to acquire new skills or expand their existing ones.
- Participants to enhance their intellectual and spiritual skills.

- Participants to enhance their social skills and strengthen their communication and interaction with each other.
- Participants are to be entertained and get away from the routine of the usual psychiatric hospital routine.

##### 4.2. Research Questions

Based on both the Greek and international literature, which is relevant to the subject of this study, and the purpose of the research, the following research questions emerged:

- Can the psychiatric hospital be a field of educational activities, especially activities related to digital literacy?
- What are the barriers perceived by the mentally ill as obstacles to their involvement with technological devices?
- Through this educational intervention, related to learning how to use a tablet, can the cognitive and social skills of people with mental illness be cultivated and enhanced?
- Has the cultivation of the described skills had a positive impact on the functionality, psychology, and quality of life of psychiatric people?

##### 4.3. Diagnostic Group

Survey sample was obtained by purposive sampling in order to meet the requirements of this research. Specifically, chronic patients suffering from mental disorders and hospitalized in the psychiatric hospital “Dromokaiteo” were chosen. The survey duration was 3 months, from March 2022 to June 2022. Participation was voluntary and a total of 11 people were involved.

##### 4.4. Methodology

The research method chosen for this study is “action research”. Its main characteristics, according to Katsarou and Tsafos, are the combination of theory and practice, its participatory and collaborative nature, reflection, redesign and its spiral dimension, as the depending of the initial reflection occurs through consecutive cycles [18].

TABLE I: KNOWLEDGE AND SKILLS

Knowledge	Skills
Switching devices on-off	Attention and focus
Handling and familiarization with the commands on the touch screen	Comprehension and processing of written and spoken language and audiovisual stimuli
Add a new contact and create calls	Embedding newly acquired knowledge through interaction with touch devices and the interactive process
Search engines and the use of internet services	Digital communication and interactive skills
Video calling and video conferencing applications e.g., skype	Cultivating a teamwork climate
Photos and videos	Taking initiative and active participation
Electronic mail	Cultivating individual and collective responsibility as members of the group
Music and video for entertainment	Fine and gross handling skills from the use of tablet devices and touch screen commands
Search for news, information and topics of interest	Skills to operate any smart device and use its capabilities alongside the use of the internet (digital skills)

Researchers, in fact, state that the purpose of action research is to extract conclusions that can be applied to people's daily lives, as well as to empower and emancipate individuals seeking to improve their social lives [19]. Participants in action research are involved in activities of various content, thus "action becomes a tool for research" [20].

All the above, in conclusion, are in alignment with the main aim and the individual goals of this research project, as well as with the design of the educational activities implemented in the context of this research project, and thus explain the decision to follow this research methodology.

#### 4.5. Sample and Data Collection

Action research is a holistic problem-solving approach and therefore uses a variety of research tools [21]. In this paper, both quantitative and qualitative research tools were used.

Specifically, two questionnaires with closed-ended questions were used, which constitute the quantitative research approach and are a result of the research team member's own work. The first one is related to the recording of the individual-demographic data of the participants as well as their opinion on the frequency and reasons for using ICTs, their attitude towards new knowledge and especially towards new technologies, and the problems that may affect their engagement with new technologies, was given at the beginning of the educational activities, while the second one, mainly related to questions of assessment of the educational activities and self-assessment of the participants, was given after the completion of the educational activities. The participants were informed about the objectives of the research and the content of the questionnaires, and explanations were given by the researcher, who was also responsible for the collection and evaluation of the data, during the completion of the questionnaires.

Finally, qualitative research tools such as the reflective journal and participant observation were also used in the context of this research, whose main source of data is the dialogue between teacher and trainees, while often non-verbal forms of communication also offer rich data and contribute to the drawing of conclusions [22].

## 5. RESULTS AND DATA ANALYSIS

### 5.1. Participation Sample

Statistical analysis of the sample data was conducted using the SPSS version 26 statistical package and descriptive analyses were performed. Based on the survey results of the participants' responses to the questionnaire of individual data, it was found that 11 people participated in the study. 63% of the sample is male and 36% is female. As for the age of the sample, 36% are 40–55 years old, 27% are over 65 years old, 18% are 25–40 years old, 9% are under 25 years old and the remaining 9% are 55–64 years old, while in terms of educational level, 55% are high school graduates, 18% are university graduates, 18% are high school graduates and 9% are primary school graduates. Finally, as regards the marital status of the sample, 73% are single and 27% are divorced.

TABLE II: ICT Usage

	PC use	Mobile use	Internet use
Every day	0%	55%	18%
Sometimes in week	0%	9%	18%
Occasionally	27%	9%	9%
No use	73%	27%	55%

### 5.2. ICT Usage

As for the frequency of computer use, 73% of the sample stated that they do not use it, and 27% that they use it occasionally. As for mobile phone usage frequency, 55% use mobile phones every day, 27% do not use mobile phones, 9% use them a few times a week and the remaining 9% use it occasionally. For frequency of Internet use 55% said they do not use it, 18% said they use it a few times a week, 9% use it occasionally and 18% use it every day (Table II).

### 5.3. Use of Internet and Mobile

A total of 64% of the sample stated that they use the mobile phone and Internet for talking, while 86% stated that they use them for instant messaging. For searching information 71% of the sample uses mobile and Internet while 29% do not use them to search for information. As for social media, 71% do not use mobile and Internet, while 29% do. For video calls 57% of the sample does not use mobile and Internet, 29% use them, while 14% said they don't know how. For online games, 100% of the sample answered that they do not use mobile and Internet. For sending photos 57% of the sample does not use mobile and Internet, while 43% use them. Finally, for reminding appointments and medication 71% of the sample said they don't use mobile and internet while 29% said that they don't know how (Table III).

### 5.4. Desire for New Knowledge and Attitude Towards ICT

According to the sample in terms of their interest in new knowledge, on average ( $M = 4.36$ ,  $S.D = 0.8$ ) the sample stated that they are very interested in new knowledge. More specifically, 55% of the sample stated that they desire very much for new knowledge, 27% that they desire much for new knowledge, and 18% have a moderate desire (Fig. 1).

The respondents' attitude on average ( $M = 2.45$ ,  $S.D = 0.82$ ) towards new technologies is positive. More specifically, 64% of the sample reported a positive attitude towards new technologies, 18% reported a negative attitude and 18% also reported a neutral attitude (Fig. 2).

### 5.5. Interest in Learning to Use Tablets, Problems and Barriers to Engaging with New Technologies

On average ( $M = 4.27$ ,  $S.D = 1.1$ ), the sample stated that they have a high interest in tablet learning. Specifically, 64% of the sample indicated very much interest, 18% indicated moderate interest, while 9% of the sample indicated much interest, and the remaining 9% of the sample indicated low interest (Fig. 3).

Referring to the problems and barriers faced by the sample in engaging with new technologies, on average ( $M$

TABLE III: USE OF INTERNET AND MOBILE

	Use mobile and internet	Don't use mobile and internet	Don't know how
Calls	64%	36%	
Sms	86%	14%	
Information search	71%	29%	
Social media	29%	71%	
Video calls	29%	57%	14%
Online games		100%	
Send photos	43%	57%	
Reminder-medication appointments		71%	29%

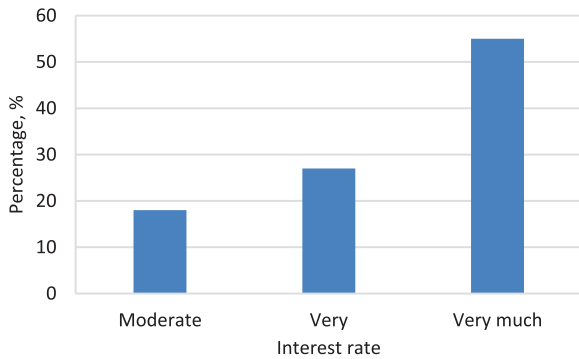


Fig. 1. Desire for new knowledge.

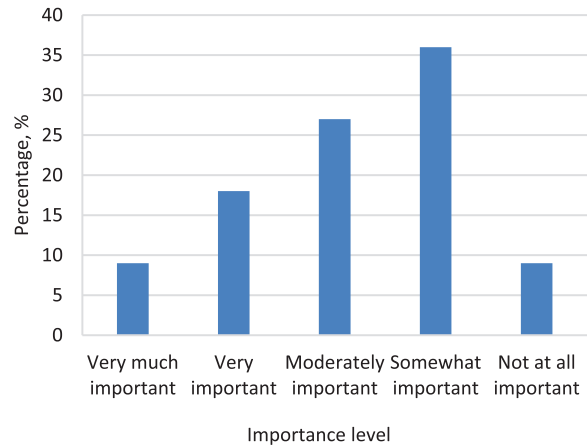


Fig. 4. Disease and impaired functions.

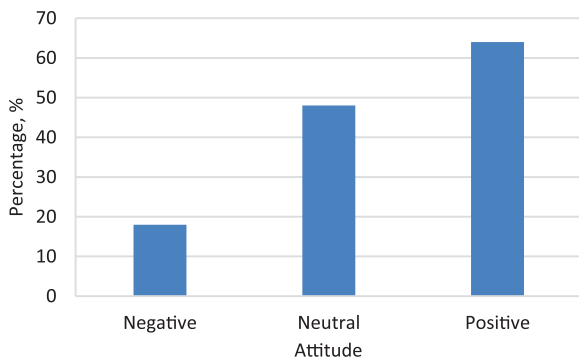


Fig. 2. Attitude towards ICT.

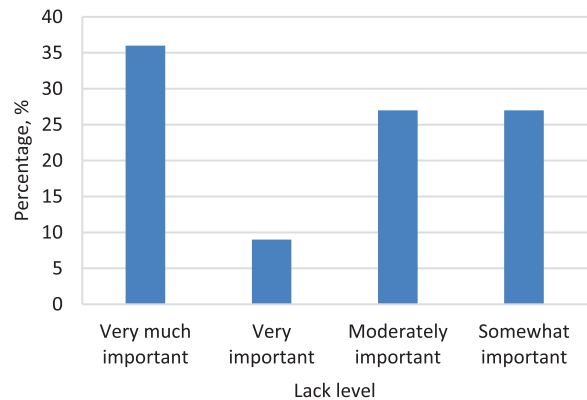


Fig. 5. Lack of ICT familiarity.

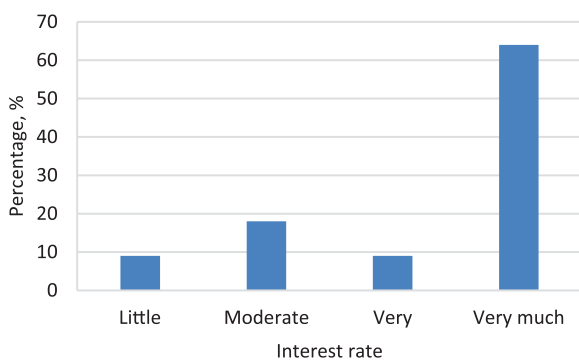


Fig. 3. Interest in learning smart device.

= 3.18, S.D = 1.16), the sample stated that their disease and impairment of cognitive, memory, cognitive, sensory, and motor functions were moderately significant barriers. Specifically, 9% of the sample indicated that it is a very significant barrier, 18% of the sample indicated that it is a very significant barrier, 27% of the sample indicated that it is moderately significant, 36% of the sample indicated that

it is somewhat significant, and 9% of the sample indicated that it is not significant at all (Fig. 4).

Lack of familiarity with ICT is a very important barrier for the sample on average (M = 2.45, S.D = 1.29). 36% of the sample considers it a very important barrier, 27% of the sample moderately important, 27% of the sample somewhat important and 9% of the sample very important (Fig. 5).

On average (M = 3.54, SD = 1.57), fear and suspicion are not significant barriers to engaging with new technologies. 36% of the sample stated that they consider it not at all important problem, 27% somewhat important, 18% very important, 9% very important and 9% moderately important (Fig. 6).

The sample stated on average (M = 1.63, S.D = 0.92) that financial cost is a very important problem for engaging with new technologies. In particular, 63% of the sample

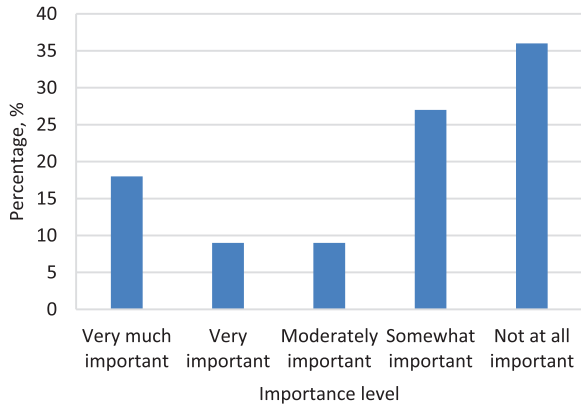


Fig. 6. Fear and suspicion of working with ICTs.

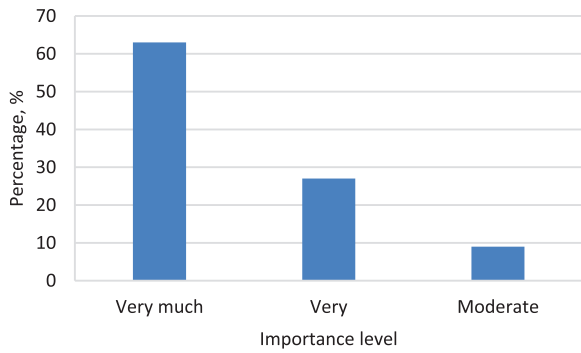


Fig. 7. Economic cost.

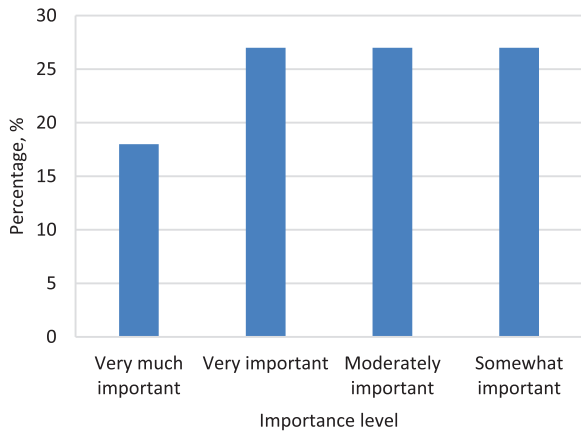


Fig. 8. Ignorance of ICT usefulness.

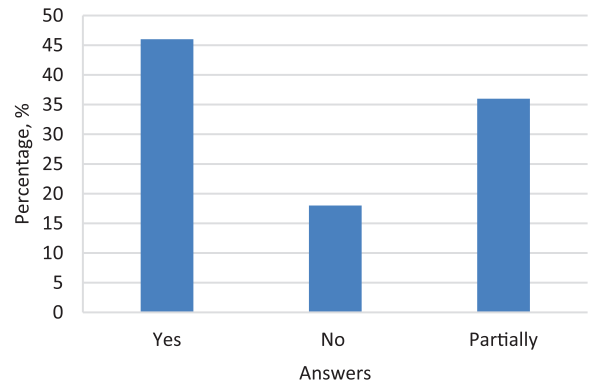


Fig. 9. Knowledge of smart device.

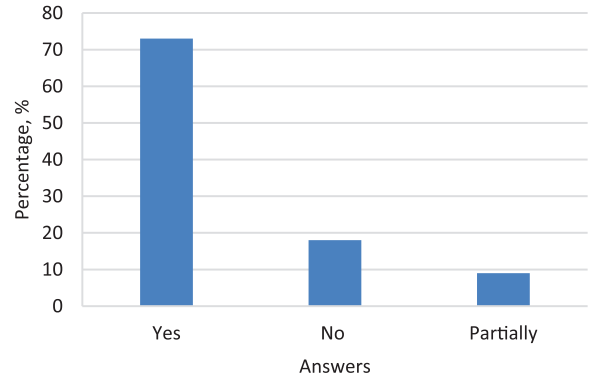


Fig. 10. Assessment of the learning process.

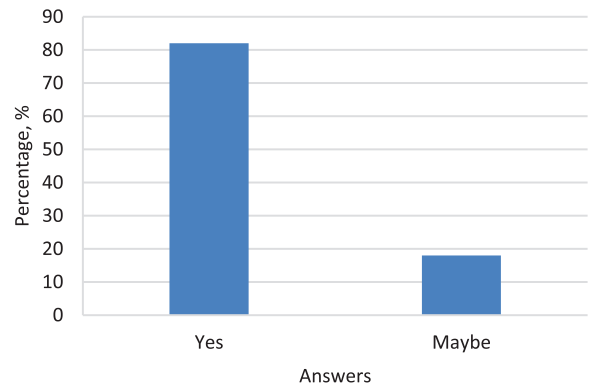


Fig. 11. Repeat procedure.

consider it as a very important problem, 27% moderately important and 9% very important problem (Fig. 7).

Regarding ignorance of the usefulness of new technologies, the sample stated on average ( $M = 2.63$ ,  $S.D = 1.12$ ) that it is a moderately important problem. 27% of the sample consider it as lightly important problem, 27% moderately important, 27% very important and 18% very much important problem (Fig. 8).

## 6. ASSESSMENT OF THE LEARNING PROCESS

Based on a questionnaire given at the end of the training process, the following results were obtained: 46% of the sample stated that after the training they knew how to use the smart device, 36% knew how to use it partially and 18% stated that they didn't know (Fig. 9).

73% of the sample described the learning process as easy, 18% did not describe it as easy and 9% described it as partially easy (Fig. 10).

The 82% of the sample indicated that they would repeat the learning experience while 18% indicated that they might repeat it. (Fig. 11).

The 73% of the sample rated that using a smartphone enhanced their cognitive functions, while 27% rated that it might have enhanced them (Fig. 12).

Also, 73% said that using a smart device would increase their sociability and 27% said it might increase (Fig. 13).

In terms of reducing stress and feelings of anxiety and insecurity about health issues, 55% said it might be reduced, 27% said it was reduced and 18% said it was not reduced (Fig. 14).

As for the difficulties they faced in the learning process 63% said they had difficulty sending and receiving emails,

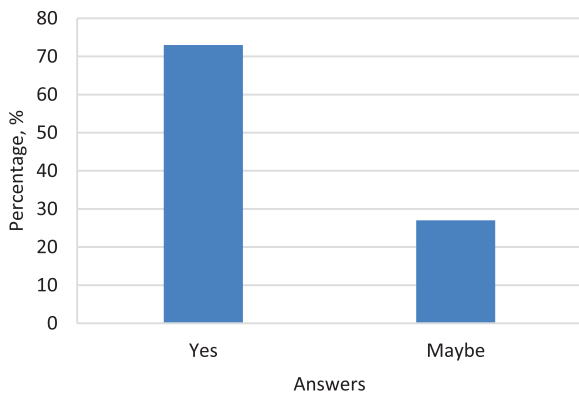


Fig. 12. Enhancement of cognitive functions.

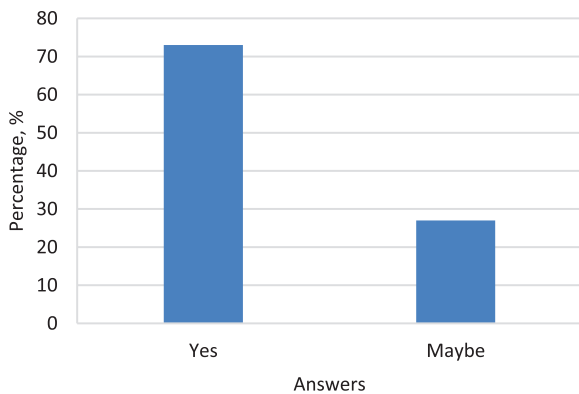


Fig. 13. Enhancing sociability.

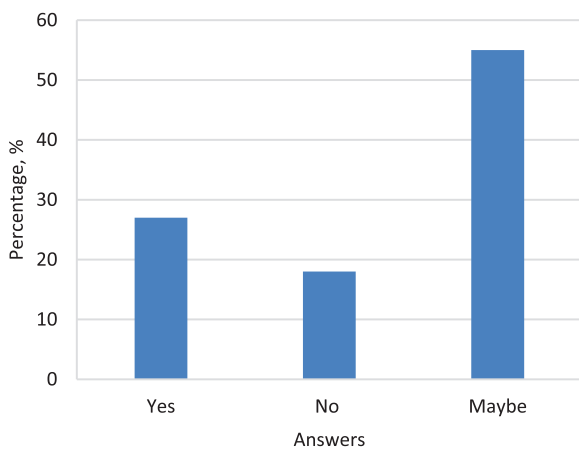


Fig. 14. Stress reduction.

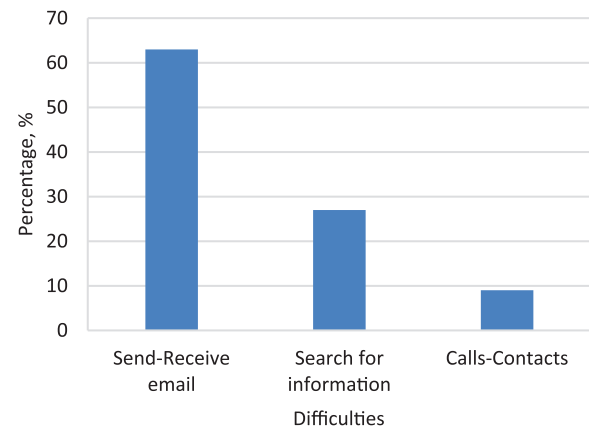


Fig. 15. Difficulties encountered in the learning process.

27% had difficulty searching for information and 9% had difficulty making calls-contacts (Fig. 15).

### 7. DISCUSSION

Participants—through their responses—make it known that the frequency with which they have the opportunity to come into contact and use ICT in the psychiatric hospital context is limited. That indicates the lack of and reduced implementation of educational activities centered in the use of ICT's, even though, admittedly, modern ICT applications offer strong educational potential, cultivating and developing such skills as sensory, cognitive, social, as well as motor skills, in an ever-changing world.

Participants expressed a strong desire for new knowledge and a great interest in new technologies, especially in learning to use smart devices (64% of the sample), which demonstrates their need to adapt to the new digital reality and not to be excluded from it.

Participants assessed that illness and impairment of cognitive, memory, cognitive, mental, sensory, and motor functions is for them a moderately important barrier to their contact with new technologies, while they identify that a very important barrier is their lack of familiarity with ICT. In addition, fear and suspicion are not, for the survey team, a significant problem in dealing with new technologies. On the contrary, the financial costs associated with ICT-related devices and media are a very important problem and often a barrier. In conclusion, in the variable concerning ignorance of the usefulness of new technologies, participants expressed that it is a moderately important problem.

The positive experience on the part of the participants and at the same time the beneficial and useful impact of the training activity as it was conducted during the three months is reflected in the evaluation of the learning process, in which the trainees to a satisfactory degree and in a strong percentage as a whole claimed that they mastered the ability to use the smart device with ease, and with interest they stated that the learning process, thus expressing their enthusiasm and the joy of their own personal experience. Moreover, referring to the difficulties encountered and the issues that made the learning process difficult for the learners, they mainly identified that they had difficulty in the process of sending and receiving emails, while the field of searching for information caused very little difficulty and even less difficulty in the application of calls and the creation of contacts. A very high percentage of the trainees (73% of the sample)—experiencing a learning environment with many and varied stimuli—assessed that their contact with technology and the use of smart devices, during the educational process, enhanced their cognitive functions, their sociability, while the results related to the reduction of feelings of anxiety and security regarding health issues are very good, as the participants stated to a very satisfactory degree that these feelings were reduced.

What the educational activity through the group of participants demonstrated is that when what is taught stimulates the learner's interest or falls within their preferences,

and when the way it is taught matches their personality, then both their desire for knowledge and their participation in the learning process are maximized. In conclusion, the implementation of the educational intervention confirmed that all people, in the light of a broader approach to educational program design that is governed by the element of recognition and respect for heterogeneity, are potentially ready to build knowledge, within a learning environment of research and discovery, regardless of the fact that everyone comes from a different starting point allowing the elimination of any “label” that undermines the right of every person to education.

## 8. CONCLUSION

At this point it is worth highlighting that the conclusions of this research do not create conditions of deductive extraction and analysis, but are of high interest, reflecting the implementation of an innovative educationally structured action, which was first applied in the informal learning environment of a public psychiatric hospital.

Specifically, as the analysis of the results and the discussion show, this research concludes that learning to use a tablet may be feasible in a group of people with mental illness and that ICT and especially Technology Supported Learning can make a great educational value contribution by strongly endorsing the value of inclusion. From the sample we have evidence that visualized instructions, films, videos, individual use of tablets and multimedia hardware in general, which are used, have a positive effect in the most effective way on the acquisition of desired knowledge and skills. The use of tablets, and pre-installed applications is an important motivation for this group of participants. Moreover, the presence of colors, animation, sound, and touch screen attracts the interest of the sample of learners and cultivates their desire to acquire new knowledge, especially digital knowledge. The impact of new technologies in the field of interpersonal and social skills is particularly beneficial and reinforcing, as can be seen from the assessment of the educational activity as a whole in this sample.

In conclusion, the present study demonstrates that the interest in new technologies among this group of learners with chronic mental disorders is strong, which suggests that new technologies can be useful for psychiatric patients in various aspects of their lives, having a positive effect on their daily quality of life and their subsequent rehabilitation in society. Researchers, managers of mental health systems, and policy makers should work together both to implement digital content training programs in mental health facilities and to enhance existing technologies and design innovative applications.

## CONFLICT OF INTEREST

Authors declare that they do not have any conflict of interest.

## REFERENCES

[1] Ζήση Α. *κοινωνία, κοινότητα και ψυχική υγεία [Society, Community and Mental Health]*. Αθήνα: Gutenberg; 2013.

- [2] Mandrcheid RW, Ryff CD, Freeman EJ, Mc Knight-Eily LR, Dhirga S, Strine TW. Evolving definitionw of mentall illness and wellness. *Prenentig Chronic Dis-Public Health Res, Pract Policy*. 2010;7:1–6.
- [3] Tyler I, Slater T. Rethinking the sociology of stigma. *Sociol Rev Monogr*. 2018;66:721–43.
- [4] Ferguson I, *Μαρξισμός, πολιτική και ψυχική δυσφορία [Marxism, Politics and Mental Discomfort]*. Τελωνη Δ., Μαργελη Μ. Ed. Αθήνα: *Μαρξιστικό Βιβλιοπωλείο*; 2022.
- [5] Παπαδόπουλος Δ., Στυλιανίδης Σ. Μια εξατομικευμένη συμπεριφορικής έμπνευσης προσέγγιση στη ψυχοκοινωνική αποκατάσταση [An individualized behaviorally-inspired approach to psychosocial rehabilitation]. *Ψυχιατρική*. 2008;19:165–76.
- [6] Morin L, Franck N. Rehabilitation interventions to promote recovery from schizophrenia: a systematic review. *Front Psychiatry*. 2017;8:1–12.
- [7] Abu Rahal Z, Vadas L, Manor I, Bloch B, Avital A. Use of information and communication technologies among individuals with and without serious mental illness. *Psychiat Res*. 2018 Aug 01;266(266):160–7.
- [8] Bauer R, Conell J, Glenn T, Alda M, Ardaur R, Baun BT, et al. Internet use by patients with bipolar disorder: results from an international multisite survey. *Psychiat Res*. 2016 Aug 30;242(242):388–94.
- [9] Colder Carras M, Mojtabei R, Furr-Holden C, Eaton W, Cullen BAM. Use of mobile phones, computers and internet among clients of an inner-city community psychiatric clinic. *J Psychiatr Pract*. 2014 Mar;20:94–103.
- [10] Ma X, Zhang X, Guo X, Lai Kh, Vogel D. Examining the role of ICT usage in loneliness perception and mental health of the elderly in China. *Technol Soc*. 2021 Nov;67:1–9.
- [11] European Commission. Employers’ perception of graduate employability, flash eurobarometer. *Directorate Gen Educ Cult*. 2010;304:56–58.
- [12] Jarvis P. *Συνεχιζόμενη εκπαίδευση και κατάρτιση, Θεωρία και πράξη [Continuing Education and Training, Theory and Practice]*. Αθήνα: Μεταίχμο; 2004.
- [13] Σολωμονίδου Χ. *Νέες Τεχνολογίες. Λεξικό της Παιδαγωγικής [New Technologies. Dictionary of Pedagogy]* Ξωχελλής Π, Editor. Θεσσαλονίκη: Αφοι κυριακίδη Α.Ε; 2007.
- [14] Τσινάρι κ. Ξ. *Ηενσωμάτωση των νέων τεχνολογιών και η αλλαγή του ρόλου του εκπαιδευτικού. 2ο Πανελλήνιο Συνέδριο: «Ένταξη και χρήση των ΤΠΕ στην Εκπαιδευτική Διαδικασία» [The Integration of New Technologies and the Changing Role of the Teacher. In 2nd Panhellenic Conference: “Integration and Use of ICT in the Educational Process”]*. Πάτρα: Ελληνική Επιστημονική Ένωση Τεχνολογιών Πληροφορίας & Επικοινωνιών στην Εκπαίδευση (ΕΤΠΕ); 2011.
- [15] Μπίκος κ.Γ. *Εκπαιδευτικοί και Ηλεκτρονικοί Υπολογιστές [Educators and Computers]*. Θεσσαλονίκη: Αφοί κυριακίδη; 1995.
- [16] Πολυχρονοπούλου Σ. *Παιδιά και έφηβοι με ειδικές ανάγκες και δυνατότητες: Νοητική υστέρηση, ψυχολογική κοινωνική και παιδαγωγική προσέγγιση [Children and adolescents with special needs and abilities: mental retardation, psychological social and pedagogical approach]*. 2001β. Β(β).
- [17] Μασαγγούρας Η. *Στρατηγικές διδασκαλίας [Teaching Strategies]*. Αθήνα: Gutenberg; 2002.
- [18] κατσαρού Ε. *Διδασκαλία και έρευνα-Ξ Η εκπαιδευτική δράση [Teaching and Research-The Educational Action]*. Αθήνα: Σαββάλας; 2003.
- [19] Αυγητίδου Σ. *Οι εκπαιδευτικοί ως ερευνητές και ως στοχαζόμενοι επαγγελματίες. Υποστηρίζοντας της επαγγελματική μάθηση για μια συμμετοχική και συνεργατική εκπαίδευση [Teachers as Researchers and as Reflective Practitioners. Supporting Professional Learning for Participatory and Collaborative Education]*. Αθήνα: Gutenberg; 2014.
- [20] Δελή Ε. *Το χρώμα και το εικαστικό σύμβολο ως στοιχεία της δημιουργικής έκφρασης των παιδιών της Πρωτοβάθμιας Εκπαίδευσης [Colour and the visual symbol as elements of the creative expression of primary school children]*. 2012.
- [21] Hollingsworth S. *International Action Research. A Casebook for Education Reform* London: Falmpress; 1997.
- [22] Altricher H, Posh P, Somekh B. *Οι εκπαιδευτικοί ερευνούν το έργο τους: Μια εισαγωγή στις μεθόδους έρευνας δράσης [Teachers Research their Work: an Introduction to Action Research Methods]*. Αθήνα: Μεταίχμο; 2001.