

READING IN THE SMART VILLAGE: HOW TECHNOLOGY CAN TRANSFORM ACCESS TO CULTURE IN RURAL COMMUNITIES

Marius Alin IONICĂ¹, Elena TOMA², Alexandru SIPICĂ³

¹University "1 Decembrie 1918" from Alba Iulia, 5 Gabriel Bethlen Street, 510009, Alba Iulia, Romania, Phone: +40258806272, Fax: +40258812630, E-mail: ionicamariusalin@yahoo.com;

² University of Agronomic Sciences and Veterinary Medicine of Bucharest, 59 Marasti Blvd., District 1, 11464, Bucharest, Romania, Phone/Fax: 00 40 744 6474 10; E-mail: elenatoma2001@yahoo.com

³ National Institute of Research and Development in Informatics ICI Bucharest, 8-10, Maresal Averescu Avenue, District 1, 011455, Bucharest, Romania, Phone: +40 21 316 52 62, E-mail: alexandru.sipica@ici.ro

Corresponding author: alexandru.sipica@ici.ro

Abstract

In the context of digitalization and the transition to industry 5.0, where AI technology will mainly intertwine with robotics, the Romanian village will have to respond to these new challenges by preparing the young generations in accordance with technological requirements. The success of this response will be given by an adequate education of the young generation in the appropriate management of traditional and digital elements. The objective proposed in this article was to provide an analysis of the impact of digitalization on the reading process of the young generations in rural areas. Based on quantitative investigations, using the survey method, we took into account the interaction between the digital environment, students, books and the reading process. Based on the analysis of 145 respondents, we observed that although the trend of digitalization is increasingly gaining momentum, even in rural areas, students tend to prefer printed books, while other activities such as: discussions and information are preferred in digital format. In this sense, we mainly concluded that reading is a driver of individual and collective progress. In a constantly changing world, the ability to learn and adapt is essential, and reading remains the most accessible and effective way to acquire new knowledge and intellectual perspectives.

Key words: reading, culture, digitalization, rural environment, smart village

INTRODUCTION

In the era of accelerated digitalization, when access to technology is becoming increasingly widespread, traditional reading on paper is beginning to be complemented or even replaced by electronic format. In the Romanian village, a space where tradition and modernity often intertwine, this phenomenon takes a special form. Although reading has long been associated with the school library or the personal collections of the inhabitants, modern technologies, such as e-readers, reading applications and digital platforms, open new horizons for access to knowledge.

This transformation, however, comes with specific challenges, but also with opportunities. On the one hand, through

digitalization, access to (literature, textbooks, specialized books and cultural publications) is greatly simplified, reducing many barriers (geographic and economic). On the other hand, the Romanian village still faces limitations related to digital infrastructure, internet access and the digital skills of its inhabitants. However, educational initiatives and programs promoting digital reading play an important role in reducing these gaps and bringing rural communities closer to new technological trends. Thus, the digitization of reading in the Romanian village is not just an adaptation to a global trend, but also an opportunity to connect people to a wider world of knowledge, while maintaining respect for local values and traditions. It is a process that redefines not only

the way people access information, but also the role of reading in the life of rural communities. Omar et al. (2023) conducted a quantitative descriptive and correlational study used on 231 fourth grade students from selected public schools in the eastern part of Malaysia. The authors apply a set of questionnaires developed and tested on four research variables: (a) knowledge, (b) motivation, (c) attitude and (d) technology readiness [8]. The results showed that knowledge on the use of digital technology was the prominent indicator describing the degree of technology readiness among the study population. The authors propose solutions to increase the implementation of digital technology for students in rural schools to create a meaningful learning ecosystem and launch strategic planning on the digitalization effort.

Rahman et al. (2022) investigated the process of digitization of education in rural areas. They conducted "a qualitative research with phenomenological methods". Their data collection methods used were interviews and observations. They used data analysis methods consisting of data preparation, data coding, application of data coding results in the themes that were analysed, as well as data interpretation. They concluded that "the four subjects, namely subjects M, H, BL and YMJ located in rural areas, had a good development of education digitization, but there were obstacles from several factors, namely the poor infrastructure factor, the availability of limited facilities and the lack of training for teachers who carry out their teaching activities in rural areas" [10]. They conclude that the constraint on the training factor (minimum knowledge of digitization) of the teacher is directly influenced by the age of the educators, most of whom are at least 40 years old.

Mamabolo et al. (2023) analysed the transition to smart villages, aiming to find out the challenges "for the use of digital library services" related to rural areas [5]. In the study conducted, the authors look for a set of categories, which they will later use in classifying and organizing data. The authors obtained interesting results, concluding that it is necessary to establish digital libraries in rural areas. As shown in numerous works, "library

authorities are challenged to adapt digital ways of providing information, librarians provide digital content in libraries to be used on users' laptops and other gadgets" [5]. A main conclusion reached by the authors is that this digitization trend forces a digital transformation of libraries "to successfully maintain libraries as sources of information" [5]. Thus, it is necessary to adopt certain transformation measures, and of course, where possible, to update information policies.

Soekamto et al., (2022) aimed to develop the professional skills of village craftspeople with an emphasis on digital literacy. In this regard, they aim to quantify the level of "digital literacy and existing competence of rural teachers in Indonesia and the Middle East" [11] by assessing the level of digital literacy training of rural teachers "for their professional development in these regions" [11]. Their research is based on a quantitative method (survey) whose data were processed and statistically analysed using SPSS. The research report highlighted "the challenges faced by digitalization in rural areas and the differences in the provision of digital literacy training in Indonesia and the Middle East". In this study, the authors identify certain limitations factors that hinder the integration of digital literacy in underdeveloped areas, these limitations would be: (lack of adequate digital infrastructure).

Preda and Toma (2021) consider that the development of rural education is a strategic objective in Romania, especially due to current challenges such as: decreasing number of students, poverty, lack of infrastructure, etc. Thus, the pressure on the sector was even greater during the pandemic period, when the rural education infrastructure was not prepared to cope with the demands [9]. They aimed to analyse the quality of education in rural areas with a case study in Argeș County, through a survey among 107 teachers from 7 middle schools and 1 high school, located in five rural villages. The results highlighted the needs of rural teachers to ensure a good education, the needs of students to learn, the measures that need to be implemented in terms of programs, teaching methods and learning techniques [9]. Tomuletiu and Moraru (2010) presented the results of research conducted in 61 Romanian

villages whose objective is "to capture the specific characteristics of rural educational forms and institutions". In the presented work, it was shown that rural development depends on factors such as: the experience and degree of education of local educational personnel; the logistics of local educational institutions; "the specific search methods used by each institution; interferences with the city community (rural-urban interrelation)" [14]. The educational training, as explained by Tița et al. (2018) of people working within a company is essential for the economic and social performance of the enterprise [13].

Moreover, this background potential positively affects both the student's career and the image of the affiliated university. Reading in rural areas is an important topic, having a significant impact on the personal, educational and cultural development of residents of rural areas. The analysis of cultural activities in rural areas involves identifying those responsible, the factors involved and the links between them.

In this context, the purpose of the research was to study how the young generations from the rural areas prefer access to books and reading, and how they disseminate the knowledge using digital solutions.

MATERIALS AND METHODS

The research was carried out in cultural units in the South Muntenia region, and is based on the analysis of book reading activity in the period 2024.

The research considered the interaction between students, books and the reading process and was based on quantitative investigation, from which we chose the survey method. Thus, questionnaires were developed aiming to identify the reading ability of primary school students, the influence of digitalization of reading, as well as the use of digital devices in the reading process.

Data collection for this paper was done through questionnaires distributed electronically to 145 respondents, using digital means at five rural schools (Lungulețu, Serdanu, Tărtășești, Slobozia Moară, Gherhani).

Frequencies and correlations were analyzed using statistical processing applications, such as SPSS.

RESULTS AND DISCUSSIONS

The Smart Village concept integrates digital technology to improve life in rural areas, including access to education and culture. Reading in Smart Villages can become more accessible and interactive through innovative digital solutions.

Technology has the potential to revolutionize access to culture in rural communities, offering new opportunities for learning, participation and the preservation of cultural heritage.

Reading is the basis of the development of society, being an important pillar in the development of the new and the traditional in the Romanian village. It also plays a crucial role in the transition to a smart village, primarily by being a powerful tool for education, and not only that, but also for awareness, innovation and emancipation of the community. In a smart village, where tradition takes on digital forms, traditional books are preserved, reading through printed books is aided by digital resources, online educational materials and access to relevant information for sustainable development.

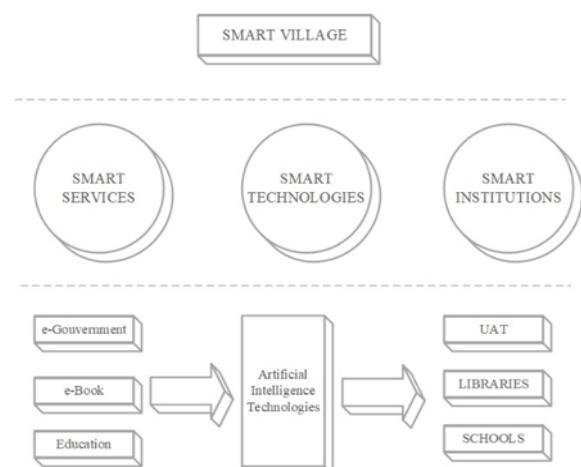


Fig.1. Reading in the Smart Village
Source: Own determinations.

Industry 4.0 brings automation, artificial intelligence and digitalization to all areas, including agriculture, education and rural development. In a Smart Village, reading

becomes essential for adapting to new technologies, supporting innovation, education and economic progress (Fig. 1).

The transition from Industry 4.0 to Industry 5.0 brings fundamental changes in the way technology is used in everyday life.

While Industry 4.0 focused on automation, artificial intelligence and data, Industry 5.0 emphasizes collaboration between people and technology, sustainability and personalization. In this context, reading becomes an essential tool for adapting to new requirements, especially in Smart Villages.

Digitizing reading in rural education represents both a huge opportunity and a significant challenge.

In many rural communities, access to traditional educational resources, such as libraries or up-to-date textbooks, is limited. Digitization can reduce these disparities by providing students with access to e-books, interactive educational platforms, and online teaching materials, eliminating geographical and economic barriers.

This digital age makes room for you in all the processes of our lives.

The Romanian village, it does not escape being updated either, the UATs in rural areas, must accept this transition.

Observing the trend of the future citizens of the village, starting from primary education to the last form of education available to the rural environment.

Basically, children represent the future of a nation, and education complemented by reading leads to an evolution of the Romanian village and of course to a well-being of the Romanian peasant.

The proposed objective of this article is to observe the impact on the way of providing and consuming reading among tomorrow's generations of rural areas.

It was identified both a positive aspect, in the appreciation of the patterns of the traditional book, but possibly also a rate of development of the digital sector that does not allow reading in electronic format (Table 1).

Perhaps at the level of school units, both the subordinate libraries and the computer laboratories should allow access to manuscripts presented in electronic format. At

the same time, procedures and methods should be developed where necessary to offer young people the opportunity to discover useful information through reading.

Table 1. Access to digital resources

Response	%	%	%
	8 - 10	10 - 12	12 - 15
At School	8.00	1.96	4.35
Home	76.00	76.47	57.97
Both Variants	16.00	19.61	31.88
In Other Parts	0.00	1.96	5.80
TOTAL	100.00	100.00	100.00

Source: Own determinations.

Although the trend towards excessive digitization has increasingly taken place in our lives, the choice of reading in a classic format is appreciated by most students. In this sense, we can think that at younger ages, such as the 8-10 year-old sample, they use digital technology mainly for communication, information and spending their free time other than reading.

Table 2 shows that the evolution of the use of digital devices for reading decreases by age group from the youngest (8-10) years to the oldest (12-15) years.

Table 2. Electronic or traditional reading

Response	%	%	%
	8 - 10	10 - 12	12 - 15
Printed Book	72.00	54.90	42.03
Digital Reading	24.00	19.61	14.49
Both Forms	4.00	25.49	43.48
TOTAL	100.00	100.00	100.00

Source: Own determinations.

The evolution of the number of books read by students in rural areas depends on factors such as: school requirements, culture and education acquired in the family, access to literature, guidance towards literature.

The data from Table 3 present the increase in book reading among students which is a positive aspect.

According to the data obtained in the presented study, book reading in the last year is more pronounced in the younger groups (8-10) years. They chose to read, in the vast majority, more than two books in the last year.

We observe here a trend of reduced reading among students in the final grades of gymnasium, they preferred to read only one, maximum two books in the previous year. This situation may also be due to the fact that they allocate more time to preparing for access to a higher education institution. Another possible cause is the allocation of free time to digital relaxation methods.

Of course, analysing the composition of readings for the little ones, we realize that they are shorter. That is why they can read more than two books in approximately the same time that students in the final grades of middle school will read one book.

Comparing the fact that the vast majority of students have read one book or more (over 80% of students between 8 and 10 years old), the data from Table 3 show that in the same age category students indicated that over 70% preferred a printed book, we can think that there is a possibility that the printed textbook is still in the readers' preferences.

Table 3. Number of books read

Response	%	%	%
	8 - 10	10 - 12	12 - 15
None	12.00	5.88	26.09
A Book	24.00	29.41	31.88
Two Or More	64.00	64.71	42.03
TOTAL	100	100	100

Source: Own determinations.

In the midst of the digital age where businesses that are not online do not exist, the sources of purchasing a book are multiple, both in urban and rural areas. Although many rural areas are often deprived of physical access to bookstores, students find support in the main sponsors (parents and grandparents) in the educational institution, as well as in local libraries. However, most often books are often discovered and purchased online and received through the shipping solutions of each literature supplier.

The study conducted among students shows that the library is at the top of the preferences for getting books for reading among the little ones. In this regard, the causes can be multiple, such as: lack of finances for a new book, the desired reading is already in the library, lack of access to new titles and publications...etc.

Students approaching middle school, show a high desire to purchase a book from the bookstore, where they can still choose from a limited number of titles. Within this category, we can observe an increase in interest in the use of digitization in purchasing books.

Comparing by age range, the most interested in using the virtual environment to purchase a book are students who have already entered middle school. If in the 8-10 age range only 20% of respondents prefer digital means, in the 12-15 age range the percentage of those who prefer to purchase a book online increases to over 30% (Table 4).

Table 4. Book acquisition

Response	%	%	%
	8 - 10	10 - 12	12 - 15
Internet	20.00	21.57	30.43
Bookstore	12.00	29.41	11.59
Library	32.00	25.49	13.04
From other source	36.00	23.53	44.93
TOTAL	100	100	100

Source: Own determinations.

The main service used by the phenomenon of digitalization of services is information. In this sense, the use of digital services for information in the acquisition of books facilitates processes such as selection, comparison and acquisition.

Among students enrolled in rural schools, there is an increasing trend with a peak in the 10-12 age range for students who do not use digital information services, as presented in Table 5. At the same time, the trend in the use of digital technologies is increased among students aged 12-15 (almost 60%). The use of digital services is related to aspects such as digital literacy, the availability of equipment and online connectivity services and, very importantly, the availability for reading.

Comparing the data from Table 3, from the 8-10 year old group, we observe that over 60% of those surveyed have read more than one book, and according to the data in Table 5, half have turned to digital services for information on readings (title, author, pricing policy, publisher, delivery time, format, physical or ebook).

Table 5. Use of digital services for information

Response	%	%	%
	8 - 10	10 - 12	12 - 15
Yes	48.00	27.45	56.52
No	4.00	11.76	7.25
Sometimes	48.00	60.78	36.23
TOTAL	100.00	100.00	100.00

Source: Own determinations.

Banciu et al. (2013) stated that in a modern and dynamic world, where information is updated every second, every person, regardless of age and occupation, it is compulsory to learn and improve your knowledge continuously. In the era of new information and communication technologies, the Internet has revolutionized almost all areas of social and professional life, including education, upbringing and culture. Education via the Internet represents a new way of learning for the student but also a new way of teaching for the teacher [3].

Discussion forums are online platforms where users can communicate, share information, and debate various topics. They are organized into specific categories and topics, allowing the exchange of ideas and experiences between members.

Examples Goodreads – international community for book reviews and recommendations, LitNet, Softpedia Books – forums dedicated to literature. According to Allen & Seaman (2005) online reading and learning is increasingly popular in education, as administrators consider it an effective method of increasing enrollment at a relatively low cost [1].

A classic custom in rural areas and only, is to share opinions and impressions with friends about the readings read, the quality of the topics and the authors. The era of digitalization brings new communication options, in which readers from other branches of the Romanian village, but also urban readers, can be involved. Asked if they prefer discussions on the internet, those interviewed in the vast majority (over 50%) denied using forums to discuss reading topics (Table 6). Taking into account that in the 8-10 year age range, the percentage of reading was higher, those in this category read one or more books (Table 3) we can see that they are also the ones who use

forums to discuss impressions about the books read.

Table 6. Internet discussion forums

Response	%	%	%
	8 - 10	10 - 12	12 - 15
Yes	48.00	37.25	13.04
No	52.00	62.75	86.96
TOTAL	100.00	100.00	100.00

Source: Own determinations

In the book Education through E-Learning (Banciu et al.(2020), it was mentioned that the beneficiaries of education are no longer the same as those in the 20th century, and the institutions providing education are fighting a huge battle to bring up a generation that no longer exists, trying to preserve methods and practices that were effective in the past but are proving ineffective today [2].

Compared to some cities, printed books in rural areas are more accessible in dedicated institutions (bookstores, libraries) and less accessible when it comes to book fairs. However, purchasing books at a book fair is a special experience, combining access to the latest titles, attractive discounts and the opportunity to interact directly with authors and publishers.

Analyzing the data from Table 7, we observe that the categories that tend to have access to literature from institutions such as the library and bookstore are between 10 and 15 years old. That is, we can say that once the middle school period is over, students access these resources more, comparing by age category.

Table 7. Where to find books for reading

Response	%	%	%
	8 - 10	10 - 12	12 - 15
Internet	40	56.86	40.58
Bookstore	20	7.84	17.39
Library	36	31.37	39.13
Book Fair	4	3.92	2.90
TOTAL	100.00	100.00	100.00

Source: Own determinations.

These institutions, which have a classic character in rural development, are competing with the virtual space, which is also easily making its way into the Romanian village. Thus, the tendency to purchase books on the internet is over 40% in each age category.

Access to digital infrastructure (digital tools and services) in the Romanian village is a key challenge for sustainable rural development, primarily for reducing the gap between urban and rural areas. In many villages, access to resources (internet and digital technologies) is often limited or below average for good functioning, which can lead to inequalities in key areas (education, health, business environment and public administration).

An article published on EDUPEDU mentioned that "in 2021, approximately 237,000 students in Romania did not have access to the internet, and 287,000 did not have the necessary equipment for online school" [4]. Most of these students come from rural areas, where digital infrastructure is less developed.

the data published by the National Institute of Statistics from 2021, showed that only 19.45% of school laboratories are located in rural areas [7]. Also, six out of ten rural schools do not have school libraries, thus limiting students' access to essential educational resources.

On the other hand, there are over 140 communes in Romania implementing over 220 "smart village" initiatives. These include schools with distance learning systems, digitalized town halls, and smart solutions for public transport and waste collection.

Table 8. Access to digital media and services

Response	%	%	%
	8 - 10	10 - 12	12 - 15
Yes	48.00	37.25	13.04
No	52.00	62.75	86.96
TOTAL	100.00	100.00	100.00

Source: Own determinations.

Marin et al (2022) affirmed that assisting rural enterprises to better connect, integrate and cooperate with urban businesses are the new challenges facing the inhabitants of Romanian villages [6].

Stoyanova-Toneva (2021) mentions that cultural heritage, to the extent that it is preserved, in symbiosis with the history of each region, has the potential to become a successful tool for the social and economic development of rural communities [12].

Reading in the Romanian village also faces challenges related to access, digitalization and

socio-economic changes. However, the transition to smart villages, combining the traditional with the digital, must support the new generations in the village through innovative solutions, such as digital libraries, interactive reading clubs, and education through technology, can transform reading into an essential tool for the development of rural communities.

CONCLUSIONS

A student's life experience, according to the study conducted, is directly proportional to the reading requirements related to age. Thus, we can conclude that as a student progresses to middle school, the reading requirements increase and students turn to modern purchasing solutions to acquire the necessary titles;

Students who are looking for books and want to turn to digital solutions, have predominantly used access to their own digital resources. The resources provided by school units are the least targeted, possibly due to lack of access to computer rooms;

Reading is a pillar of the development of a smart village, providing residents with the necessary tools to learn, adapt and thrive in a constantly changing world. By promoting reading and access to information, rural communities can become more resilient, more innovative and more connected to global trends; Investment in education and reading resources is essential to transform villages into smart and sustainable communities;

Reading is a central element in the transition from Industry 4.0 to Industry 5.0, providing rural communities with access to essential information about new technologies, sustainability and human-machine collaboration. Through digitalization and access to quality knowledge, smart villages can become more prosperous, more innovative and better connected to the future;

While there are notable efforts to improve access to digital resources in Romanian villages, significant challenges related to infrastructure and facilities persist. Continued investments in digitalization and education are

essential to reduce the digital gap between rural and urban areas.

REFERENCES

[1]Allen, I. E., Seaman, J., 2005, Growing by degrees: Online education in the United States, 2005. Needham, M.A., Sloan-C., http://www.sloan-c.org/resources/growing_by_degrees.pdf, Accessed on 5 August 2025.

[2]Banciu, D., Ardelean, B.-O., Ivașcu, L., Fodorean, D., 2020, Educația prin E-Learning, Editura Academiei Oamenilor de Știință (Education by E-Learning, Academy of Romanian Scientists Publishing House).

[3]Banciu, D., Balog, A., 2013, Calitatea sistemelor și serviciilor de e-learning, 2013, Editura AGIR (Quality of e-learning systems and services, AGIR Publishing House).

[4]Edupedu, <https://www.edupedu.ro/>, Accessed on 5 August 2025.

[5]Mamabolo, M. J., Durodolu, O. O., 2023, Rural accessibility to digital libraries: requirements and challenges, *Digital Library Perspectives*.

[6]Marin Ilie, N., Oprea, I.-A., Turcea, V.-C., Rusu Păruș, A., 2022, New dimensions of rural communities' development in Romania – smart village concept, *Scientific Papers Series Management, Economic Engineering in Agriculture and Rural Development* Vol. 22(2), 425-436.

[7]National Institute for Statistics, Results and performance of industrial and trade companies, 2022, https://insse.ro/cms/sites/default/files/field/publicatii/rezultate_si_performante_ale_intreprinderilor_din_comer_t_si_servicii_in_2022_0.pdf, Accessed on 5 August 2025.

[8]Omar, M. K., Dainal, E., Puad, M. H. M., Zakaria, A., 2023, Factors Determining the Optimization of Digital Technology in Rural Schools. *International Journal of Academic Research in Progressive Education and Development*, 12(1), 1685–1704.

[9]Preda, M., Toma, E., 2021, The quality of education in rural areas from the perspective of primary and secondary school teachers, *Scientific Papers Series Management, Economic Engineering in Agriculture and Rural Development*, Vol. 21(2), 493-498.

[10]Rahman, N.N, Rahayu, D., Rasyid, M., Wahyu, S. A., Nurhandayani., Simatupang E. D., 2022, The Development of Education Digitalization in the Hinterland, *European Journal of Education and Pedagogy (EJ-EDU)*, 10.24018/ejedu.2022.3.5.475

[11]Soekamto, H., Nikolaeva, I., Abbood, A. A., Grachev, D., Kosov, M., Yumashev, A., Kostyrin, E., Lazareva, N., Kvitkovskaja, A., Nikitina, N., 2022, Professional Development of Rural Teachers Based on Digital Literacy, *Emerging Science Journal*, 6(6), 1525–1540. <https://doi.org/10.28991/ESJ-2022-06-06-019>.

[12]Stoyanova-Toneva, Y. A., 2021, Cultural-historical and educational resources of rural areas, *Scientific Papers Series Management, Economic Engineering in Agriculture and Rural Development*, 21(2), 629 – 636.

[13]Tîță, V., Bold, N., Popescu, D. A., Nijloveanu, D., 2018, Modelling smart economy and education-related environments using system dynamics principles, *Scientific Papers Series Management, Economic Engineering in Agriculture and Rural Development* 18(2), 471-474.

[14]Tomuletiu, A. E., Moraru, A., 2010, Rural education in Romania: Present and perspectives, *Procedia - Social and Behavioral Sciences*, 2(2), 402-406.