Blended Communication in the Education System

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Abstract
The education at the undergraduate level has to be made considering the environment created by the school and family. The minor student education is driven both by the teachers and parents. Good cooperation between them is creating a proper climate to generate a sustainable education and performance. Starting from the school obligation to communicate with parents about results and behavior of the student, and to inform them about the educational offers, it was extended to specific teaching support portfolio, the individual student profile, etc. The study aims to determine the existence and usage of the communication tools in four Romanian counties, as a part of the educational network. The study was made before the pandemic crisis, which dramatically changed the communication channels, but they highlight the gap between the digital and classic components, and the teaching staff and the education managers are relating with this issue. The ITC technology offers broad areas of equipment and application software available and affordable for a large share of parents. The health crisis transfers the entire education process online and speeded up the digitalization process. Based on the study results we can estimate the gap and the need to increase the digital communication between school and students or parents. The balance between classic and digital communication has to be done, especially in the areas less economically developed.

Keywords
Education; communication; technology access; skills; behavior.

Introduction

The systematic increase in the number of equipment and users of the internet and mobile telephony leads to the idea of orienting education towards the online environment, this being a natural response to the information and communication needs independent of location and time, thus defending mobile learning - M-learning (Roscan, 2015, p. 52).

Technological development and the possibility of a very large number of people to access, both equipment and communication services at affordable prices, their presence globally make it possible to exchange information in real-time and independent of location. This will impact the communication between parents and teachers or education managers (Kuusimäki et al., 2019).

M-learning has become a possibility that, from a statistical point of view, could solve the problem of access to information, education, and instruction. Moreover, there are international projects, some of which have been completed, through which information in certain areas of knowledge, such as legal information, has gained free access. The global information-education system has become an extremely challenging reality for formal state systems in all the network nodes of which they are constituted.

We consider that, at the moment, the first to feel the earthquake created by the virtual space of information are the parents. As the first educational mentors, they more or less consciously start parenting courses on social networks, from the moment of the decision to bring a child into the world. In the information network of the traditional society, the parents of the last two centuries, found their way to the educational points of the state systems guided by the data circulating in their knowledge network, the media never being overly interested in publicizing data on student enrollment. Once in the educational system, the family's care regarding the child's professional development was entrusted to the school, the parents taking over with great confidence, from the school, the information regarding the children's abilities and skills concerning the information (Garbacz, 2015; Palts & Harro-Loit, 2015).

Neuroscience research argues, as Mircea Malița also stated, the falsity of the hypothesis regarding the possibility of creating neural pathways through synaptic networks, in the absence of the consent of the brain owner. The only way that the amount of electrical charge needed to configure a synaptic response can enter a person's brain is electroshock, used intuitively rather than scientifically argued.

In this complex system of neural networks, the appearance of the *informational pacifier*/phone/tablet/computer, which the reference parent brings as a fetish in the child's life, creates the possibility of refuge from a real dichotomous environment, in the virtual space where the impression is, the little chromatic-visual and phonic level of harmony, acceptance, security. Thus, the personality profile of the reference parent risks entering into a dichotomous relationship not only with third parties that appear in the child's life in the extended family or at school but also with actors of the virtual world, which gives them the chance to visualize bright, happy, optimistic faces, confident, who do not quarrel with them, do not humiliate them, do not make fun of them, not only do they not appreciate them negatively, but I give them cups, diplomas, money, congratulations for deeds that, in principle, they are not aware of, being often subconsciously guided to actions that involve positive feedback.

If parents seem to be seated by the new dimension of the educational system created by Cyberspace, unable to decide on an environment with evolutionary benchmarks for the child, truly quantifiable, education managers can model (they can be encouraged, supported to model) the personality profile to adapt the systemic levers it manages to each of the stage needs of the formation and development of children (Kraft, 2017; Abubakari, 2020; Thompson et al., 2015).

Under pressure from the state of emergency that forced the government to close schools, the system's education managers have publicly announced how the courses will be continued: online, on several educational platforms made available to Internet

users for a long time by Cyberspace entrepreneurs. Suddenly, teachers and students found themselves in the situation of establishing academic connections in more or less known private spaces that offer the possibility of hosting video-audio communication and many facilities specific to online schools, free of charge (Sylaj & Sylaj, 2020).

Thus, a reality that until March 2020 was defined by schoolchildren and the family as an evil that disturbs the lives, health, and future of children viewed in terms of negative effects, has become the official environment of the relationship between schoolchildren and students, or with other words, chaos has acquired the appearance of the necessary order. The pandemic did nothing but bring to light a truth that could not be fully integrated into the state of normalcy: the systems must be digitalized; the school must be fundamentally reformed (Lee, 2021; Chena & Chena, 2015).

How great the efficiency of communication through the tools that technology and the internet make available is impossible to quantify. Probably every point where solutions are sought gains light years as it thinks about cluster policies and builds its swarm or growth clusters inspired. An educational manager looking for stage fractals on well-defined sequences strategically can move in cyberspace with unimaginable speeds. The only condition is to look in the right direction, i.e. towards the meeting point between school and tele-school, work and telework visibly in the territory where he makes decisions.

A current challenge is the ability of the educational manager to communicate with students and parents for a restructuring of the educational system in the context of technological development and the need to translate the process into a digital context. Besides the technology, the abilities and communication skills of the parent and students have to be evaluated and considered (Gartmeier et al., 2016; Loudová et al., 2015).

The research targeted subjects from 4 counties corresponding to the provinces of Romania: Bacau (Moldova), Buzau (Muntenia), Brasov (Transylvania), and Tulcea (Dobrogea). Out of a total of about 6300 school units at the national level, the targeted segment is about 600 existing school units in the 4 counties and implicitly 600 educational managers.

The representative sample was calculated using the formula (Novak, 1977, p.136):

$$n = \frac{t^2 p(100 - p)}{\Delta_x^2}$$

where:

n= number of subjects;
t= 1.96 = associated coefficient;
p=0.98 = probability;
Δ_x= 0.02 = standard error.

The weighted arithmetic mean was used as an indicator of the central tendency (Biji et al., 2002, pp.187, 219-221):

$$\bar{x} = \frac{\sum_{i=1}^{k} x_i n_i}{\sum_{i=1}^{k} x_i}$$

where:

$\bar{x}$ = weighted arithmetic mean;

x_i= scores for i=1,2,3...k or 1,2,3,4,5; $\sum_{i=1}^{k} n_i$=n;

n_i = absolute frequencies (number of statistical individuals);

The determination of the interval in which the true average of the general community is almost certainly found is made according to the formula (Novak, 1977, p.69):

$$\bar{x} \pm 1.96 * EE_m$$

where:

EE_m- is the standard error (standard error) for the weighted arithmetic mean

$$EE_m = \frac{\sigma}{\sqrt{n}}$$

σ = being the mean square deviation (Novak, 1977, p. 36). Interval ($\bar{x}$- 1.96*EE_m; $\bar{x}$+ 1.96*EE_m) will be called the confidence interval.

As synthetic indicators of variation were used **σ(mean square deviation)**, calculated according to the formula (Biji et al., 2002, pp. 219-221):

$$\sigma = \sqrt{\frac{\sum_{i=1}^{k}(x_i - \overline{x})^2 n_i}{\sum_{i=1}^{k} ni}}$$

$x_i, \bar{x}, n_i$ have the meanings presented above and **the coefficient of variation** (Biji et al., 2002):

$$V = \frac{\sigma}{\bar{x}} 100$$

It is estimated that if V is greater than 35% -40%, the studied community is more heterogeneous. Below 35%, the average has a higher degree of representativeness, the community being more homogeneous (Biji et al., 2002).

The data were processed through Google Forms, *Excel* programs within the *Microsoft Office Professional Plus 2013* package. The results presented in this paper are a component of a larger study.

Results and discussions

The need to change teachers' behaviors is acute because continuing the health crisis is no longer a possibility, but a reality that forces them to learn quickly online thematic communication behaviors. The danger, still not very visible, is represented by the conditions that the telework market implies in education. From the moment parents and students understand that online education no longer has any relationship with the school buildings with which they signed an enrollment contract, but only with the skills of managers and teachers to guide them in acquiring skills, they will migrate,

naturally, in this direction, leaving without primary beneficiaries the human resources included in the unstructured educational units.

This level of investigation demonstrates the existence of a double perception on the limits of communication between school representatives and adult students, respectively parents. Communication in personalized networks through the relationship with personal property tools is approached with greater openness than communication in networks with official tools.

The first component analyzed is the specificity of the communication networks between the school and the family of the minor student, respectively the adult student through four categories of interactions:

- Transmitting information on student results and behavior;
- Communication between teachers-leaders and parents;
- Communication between the school management team and parents;
- Consultation of parents and students on school initiatives.

The delivery of information about the result and behavior of students to parents can be done through three main channels: classic communication (meetings with parents), through the platform/e-mail and social media groups (messenger).

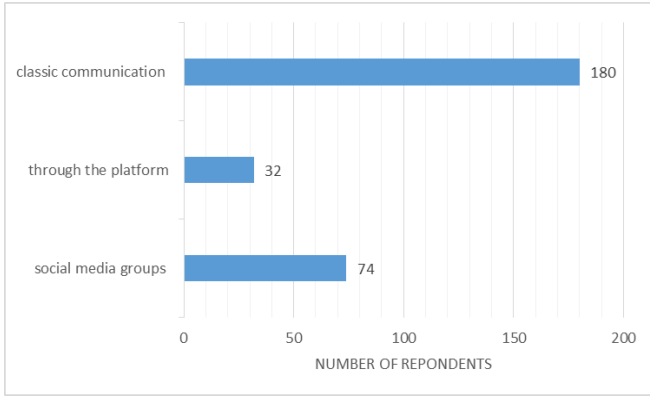

Figure 1. Results and behavior of students' communication to parents
(authors representation)

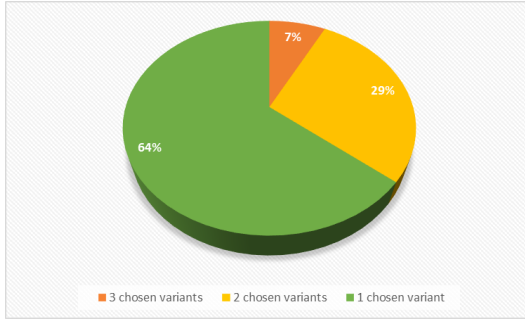

Figure 2. The incidence of communicating student results
(authors representation)

The weighted arithmetic mean is 1.43, which means that the respondents opted for answers between the scores of a chosen variant and 2 chosen variants. The confidence interval for the general community is (1.35; 1.51), which almost certainly validates the actual value of the average of the general community. The coefficient of variation is 43%, which expresses that the answers are heterogeneous.

Current managers support policies for communicating data on the results and behavior of the minor student or adult student, in meetings with parents and through working groups created by teachers, less through the computer system.

Online communication through working groups between leading teachers and parents of social media (messenger) represents the result of regulations or is done as an option available to one of the participants.

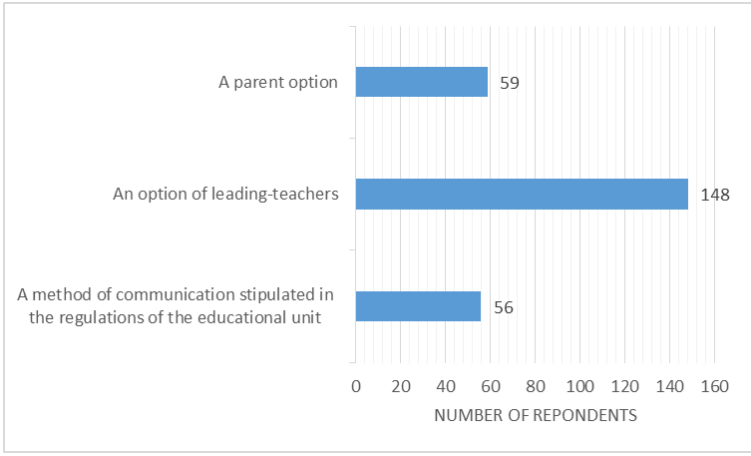

Figure 3. On-line communication between teachers and parents
(authors representation)

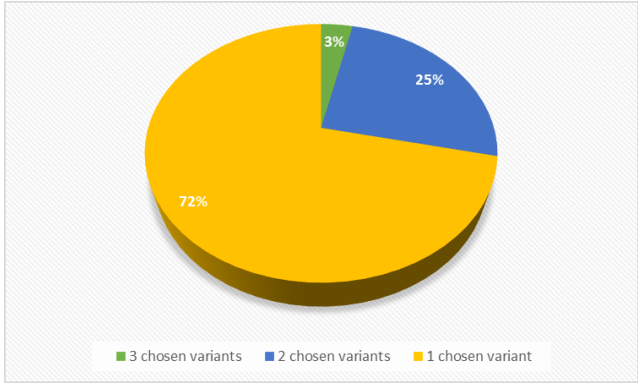

Figure 4. Incidence of online communication between teachers and parents
(authors representation)

The weighted arithmetic mean is 1.32, which means that most of the respondents opted for the scores a chosen variant) and two variants. The confidence interval for the

general community is (1.25; 1.39), which almost certainly validates the actual value of the general community average. The coefficient of variation is 40%, which expresses that the answers are heterogeneous.

Managers in the current system support online communication policies in working groups between teachers and parents.

The existence of online communication between the school management team and parents was an alternative, used more or less until the beginning of 2020 when the pandemic introduced the need to use this channel. However, data on the use of online channels provide us with information on future areas of intervention.

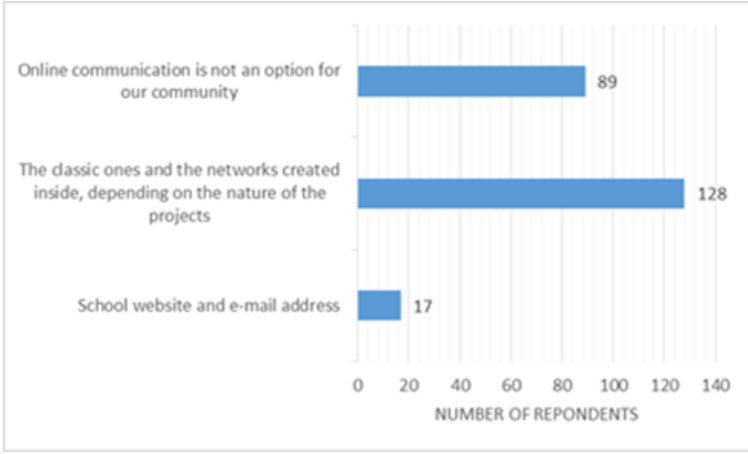

Figure 5. Online communication of school management with parents
(authors representation)

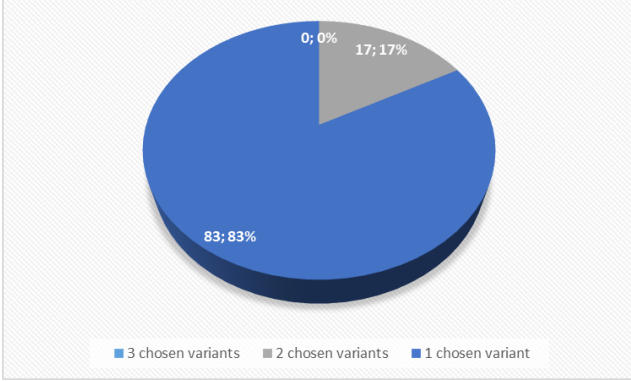

Figure 6. The incidence of online communication of school management with parents
(authors representation)

The weighted arithmetic mean is 1.17, which means that the answers are very close to a chosen variant, highlighted by the overwhelming weight of the answers that chose a variant. The confidence interval for the general community is (1.12; 1.22), which almost certainly validates the true value of the average of the general community. The

coefficient of variation is 32%, which expresses the fact that the answers are relatively homogeneous.

Current managers encourage both traditional and technological communication policies between the school management team and parents.

A third dimension concerns the consultation of parents and students on the initiatives of the school is carried out.

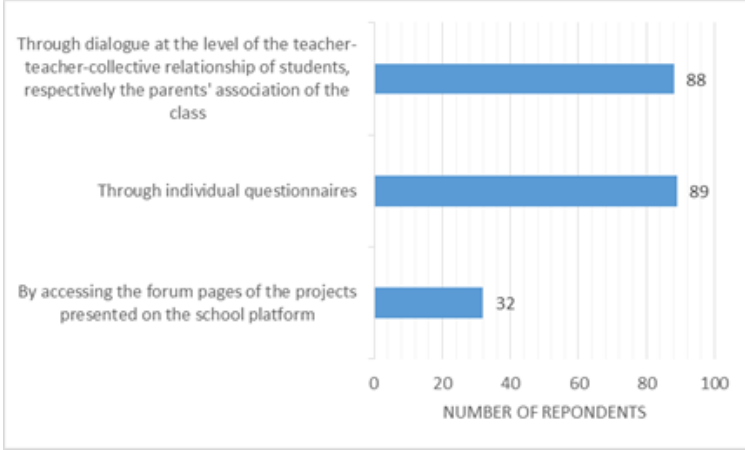

Figure 7. Consulting parents and students
(authors representation)

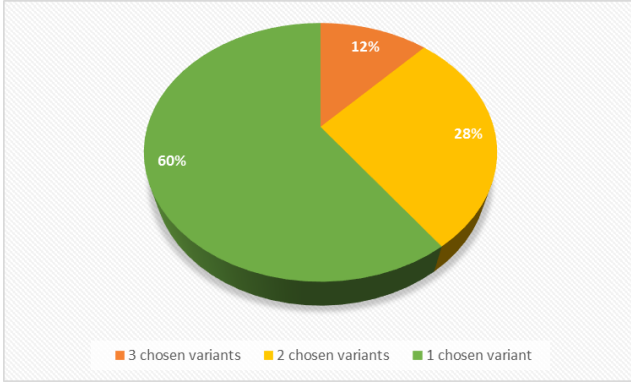

Figure 8. Incidence in consulting parents and students
(authors representation)

The weighted arithmetic mean is 1.52, which means that most of the respondents opted for the scores one chosen variant and two chosen variants. The confidence interval for the general community is (1.43; 1.61), which almost certainly validates the actual value of the general community average. The coefficient of variation is 45%, which expresses that the answers are heterogeneous.

Current managers support policies for consulting students and parents on school initiatives, through traditional tools and methods.

A second component analyzed is the specificity of communication networks between the school and the student's family. It was done by questioning about:

- How to achieve thematic communication between students and teachers;
- Information about the offers of activities that involve the training of excellence or intensive study;
- Information about the offers of remedial activities;
- Highlighting the didactic resources with formative character made available to the students;
- Centralization of data on student activity and behavior in specialized classes;
- The students' professional portfolios for each discipline.

Thematic communication between students and teachers is done through direct interaction or online channels. This is the expression of teaching materials and information made available to students to ensure a beneficial educational process of knowledge transfer and acquisition of skills.

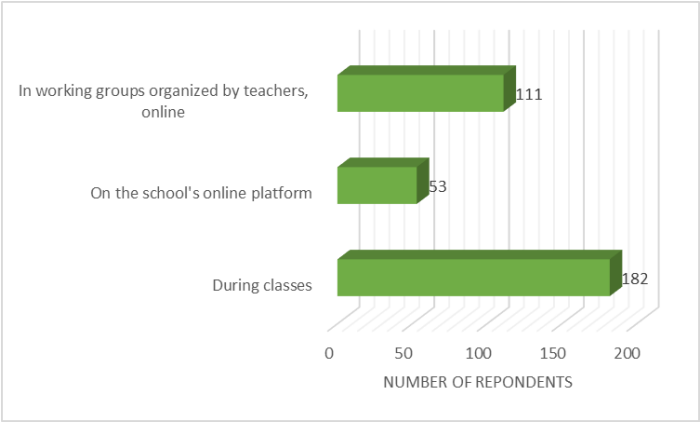

Figure 9. Thematic communication between students and teachers
(authors representation)

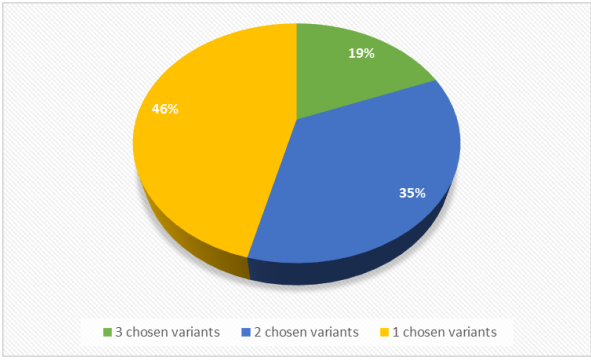

Figure 10. The incidence of thematic communication between students and teachers
(authors representation)

The weighted arithmetic mean is 1.73, which means that the majority of the respondents opted for variants between scores 1 and 3. The confidence interval for the general community is (1.63; 1.83), which almost certainly validates the real value of the general community average. The coefficient of variation is 44%, which expresses that the answers are heterogeneous.

Current managers support policies to encourage thematic communication between teachers and students through classical tools and methods.

The offers of activities that involve the training of excellence or the intensive study are proposed by the specialized teachers on the classical channels or through electronic variants.

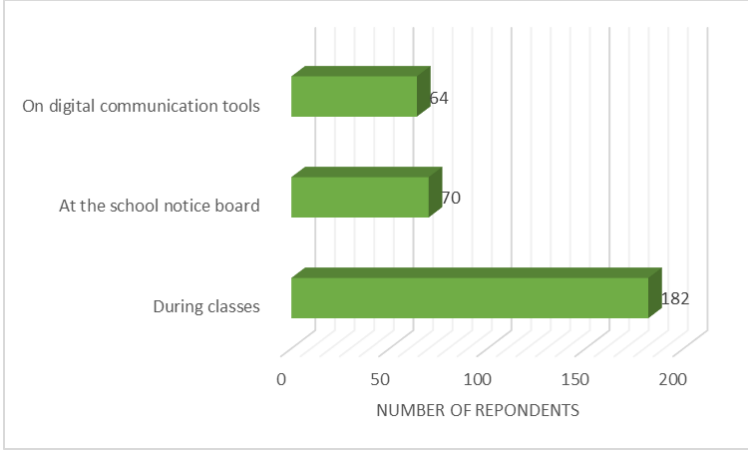

Figure 11. Submission of training offers of excellence
(authors representation)

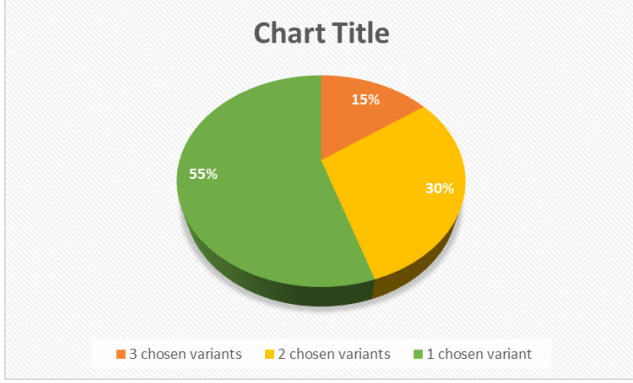

Figure 12. The incidence of the transmission of excellence training offers
(authors representation)

The weighted arithmetic mean is 1.60, which means that most of the respondents opted for variants between scores 1 and 2. The confidence interval for the general community is (1.5; 1.7), which almost certainly validates the true value of the general

community average. The coefficient of variation is 46%, which expresses the fact that the answers are heterogeneous.

The current managers support policies to encourage the communication of training offers that involve the training of excellence, by specialized teachers through classical tools and methods.

The existence of a significant number of students who have deficiencies in the educational process benefits from offers of remedial activities. These are proposed by specialized teachers through the classic communication channels or the online ones.

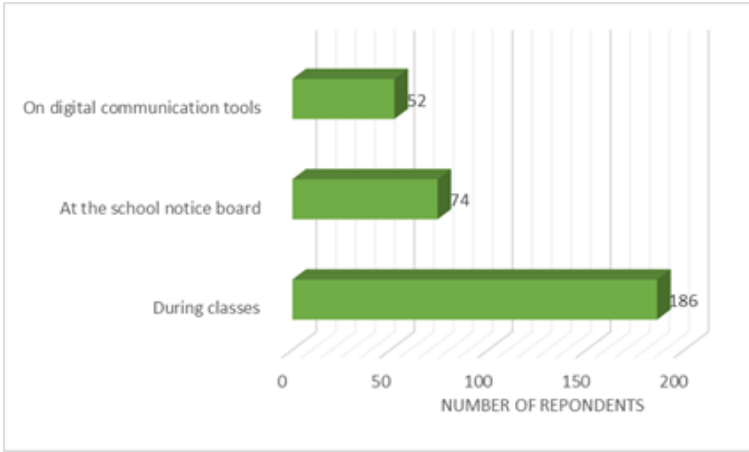

Figure 13. Transmission of offers of remedial activities
(authors representation)

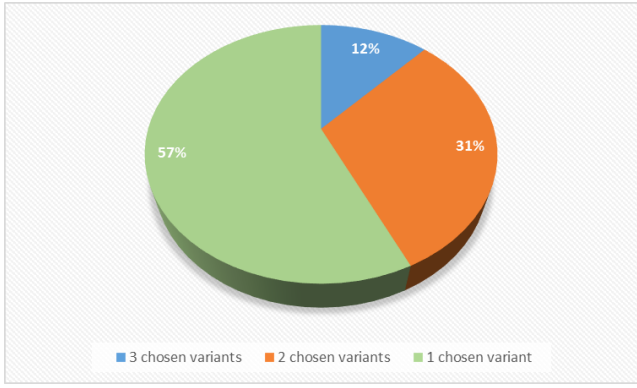

Figure 14 Incidence of the transmission of offers of remedial activities
(authors representation)

The weighted arithmetic mean is 1.56, which means that most of the respondents opted for variants between scores 1 and 2. The confidence interval for the general community is (1.47; 1.65), which almost certainly validates the true value of the general community average. The coefficient of variation is 45%, which expresses that the answers are heterogeneous.

The current managers support policies to encourage the communication of offers of remedial activities, proposed by specialized teachers, through classical tools and methods.

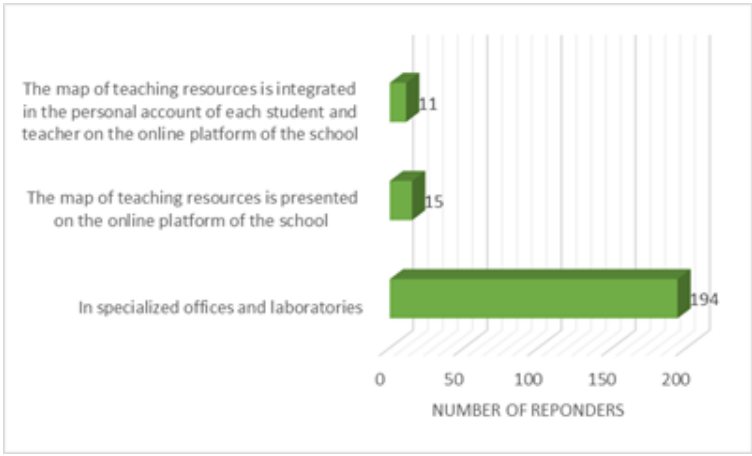

Figure 15. Teaching resources made available to students
(authors representation)

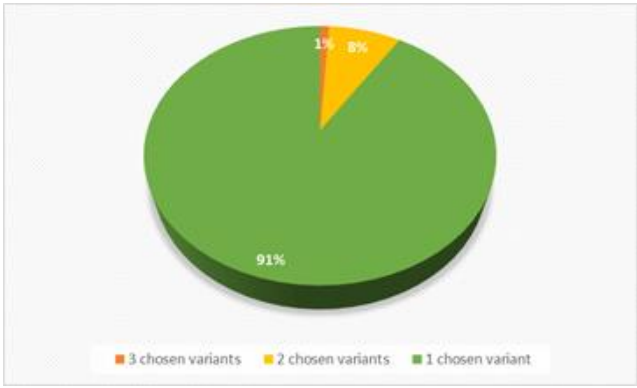

Figure 16. Incidence of teaching resources made available to students
(authors representation)

At the same time, the educational manager is responsible for facilitating students' access to teaching resources. To allow students unrestricted access to them, they are made physically available in laboratories or libraries or electronic format.

The weighted arithmetic mean is 1.10, which means that most of the respondents opted for variants between scores 1 and 2, very close to 1. The confidence interval for the general community is (1.06; 1.14), which almost certainly validates the true value of the average of the general community. The coefficient of variation is 30%, which expresses the fact that the answers are relatively homogeneous.

The current managers support policies to make teaching resources available to students through classical methods.

The centralization of the data regarding the student's activity and behavior at the specialized classes is done by the teachers through the meeting sheets or by registering in the student's account.

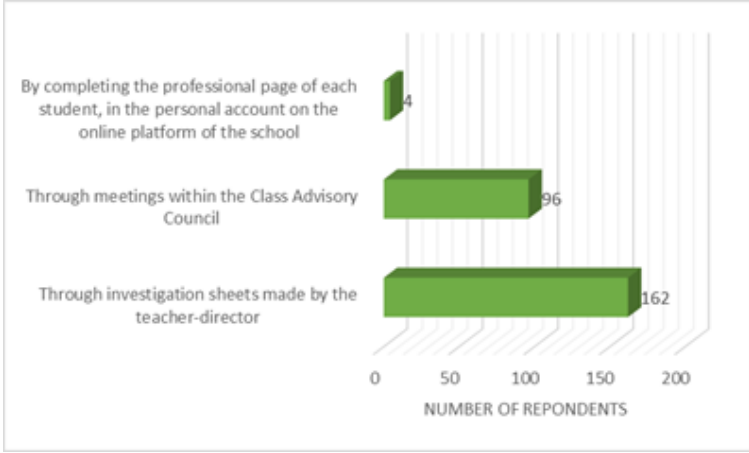

Figure 17. Centralizing student outcomes
(authors representation)

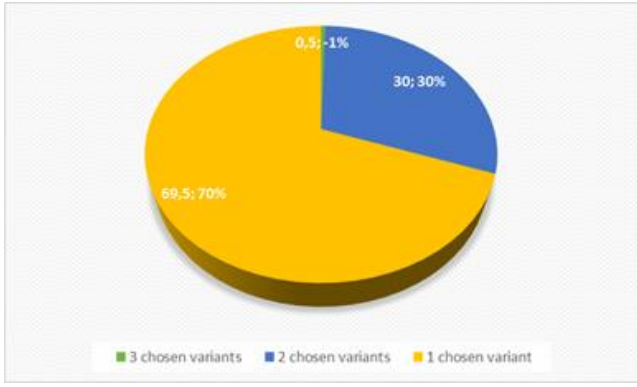

Figure 18. The incidence of centralizing student outcomes
(authors representation)

The weighted arithmetic mean is 1.31 which means that most of the respondents opted for variants between scores 1 and 2. The confidence interval for the general community is (1.25; 1.37), which almost certainly validates the true value of the average of the general community. The coefficient of variation is 36%, which expresses the fact that the answers are relatively homogeneous.

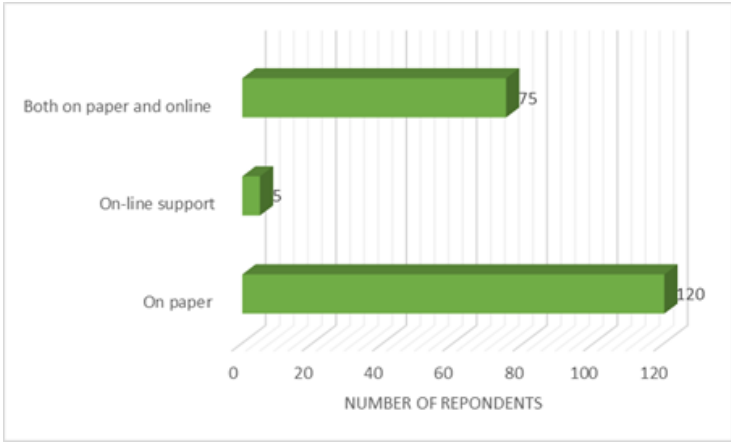

Figure 19. How to create students' professional portfolios
(authors representation)

Current managers support policies to encourage the centralization of data on student activity and behavior in specialized classes through classical methods and tools. The professional portfolios of the students for each discipline are made are important forces for establishing his interest and abilities towards certain disciplines or the disinterest and difficulties towards others. These are components of the student's profile and are fundamental elements in the process of professional and career guidance. How to create and store is very important in the educational process.

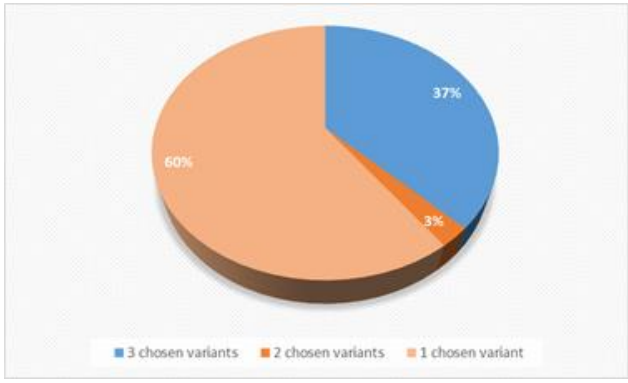

Figure 20. The incidence of the way of realizing the professional portfolios of the students
(authors representation)

The weighted arithmetic mean is 2.22, which means that most of the respondents opted for variants between scores 2 and 3. The confidence interval for the general community is (2.09; 2.35), which almost certainly validates the true value of the average of the general community. The coefficient of variation is 43%, which expresses that the answers are heterogeneous.

The current managers support policies to encourage the creation of students' professional portfolios for each discipline on classical and technological supports.

Conclusions

The questioning of the specificity of communication networks between school and the family of the minor student, respectively the adult student, demonstrates the existence of a two-way school-family data flow through messenger applications provided by phones and computers with internet access of teachers, parents, and major students. The communication framework is approached from the perspective of the facilities assumed individually; there is some reluctance to approach initiatives that would allow formalized communication through applications assumed at the institutional level.

This level of investigation demonstrates the existence of a double perception on the limits of communication between school representatives and adult students, respectively parents. Communication in personalized networks through the relationship with personal property tools is approached with greater openness than communication in networks with official tools.

The reality of the double perception regarding the limits of the relationship in communication has a general universal character. Today's networks and the facilities provided by technology have created surrealism that has forced us to accept the hypothesis of chaos generated by tone interference in communication. Contexts in which, believing that they dialogue in a network with a closed feedback loop, people approach communication registers that exceed the limit of colloquialism towards language free of any constraints, have acquired, thanks to the technology instrumented at their free initiative, transparency that creates dissonances of various frequency heights. How teachers, parents, and students are currently manifesting themselves, demonstrates the existence of these possibilities in the networks of the educational system as well.

Maintaining system balance by fractalizing managers involves the ability to generate ambivalent fractals, by encouraging communication in formalized or institutionalized environments and by developing skills to reframe information by translating the intention to communicate. This requires the formation and improvement of information skills in communication processes specific to communication in such networks.

The lessons to be learned from the COVID-19 pandemic are that we have to be all the time updated with the newest education tools and be prepared for change and challenges. Taking into consideration that the teaching staff is in charge of the education of the future workers they should be the most flexible and future-oriented ones.

It is obvious that before the pandemic crisis the inclination towards digital communication is rather small and it has to be changed. The next development of the study is to apply the same questionnaire to the same sample after the health crisis to see if there is any progress and to find out the components to be improved. At the same time, the perception of the students and parents will complete the picture.

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