DEVELOPMENT OF DIGITAL COMPETENCIES FOR PROFESSIONAL PERFORMANCE IN UNIVERSITY STUDENTS

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Abstract

With the advent of new technologies, the development of digital skills is essential for the efficient performance of students in their academic, professional and personal lives. Although, in functional terms, those born in the digital world manage Information and Communication Technologies (ICT), it does not mean that such skills prepare them for their working life. In fact, in recent times platforms or applications for communicative interaction have been created, which entails the generation of new codes, signs or expressive forms of communication; therefore it is necessary to provide higher education students with communicative strategies that allow them to interact in an effective way in these media.

As observed and opposite to what it was believed, digital competence does not refer only to the skill in the use of technological instruments, but implies being competent in the search, organization and interpretation of information, managing and processing large amount of data with a critical and thoughtful thinking, generating communicative discourses using different codes (visual, spatial, sound, graphics, etc.) depending on the geopolitical and sociocultural context.

This project is developed within the framework of the Tec21 Educational Model, proposed by the Tecnológico de Monterrey. This model presents an educational innovation of development and learning for its students, highlighting as a central unit the Challenge Based Learning model. The main objective of the project is to identify the transversal digital/mediated communicative competencies that must be developed in higher education students during their studies to provide them with the necessary tools that allow them to perform highly in their specialty areas. In this research we worked with a sample of 147 professionals and 218 students of different careers and semesters, at Tecnológico de Monterrey, campus Querétaro.

The results clearly show some important trends for the development of university-level competencies, which will allow a better use of the platforms, improving communication processes. Finally, there is a deep need to prepare future professionals with the knowledge and skills necessary to responsibly access the information available in various digital spaces.

Keywords: Digital competence, communicative competence, ICT, Model Tec21, Educational Innovation, Higher Education.

1 INTRODUCTION

In recent years, the exponential growth of Information and Communication Technologies (ICT) has led to an evident concern in terms of generic and particular communicative competencies, both in the professional and labor fields. The historical-technological moment that is being lived has transformed the way of interacting and learning in different contexts and levels, through new discursive formats and digital platforms. While it is true that young people have innate skills in the use of technology, that does not ensure that they interact through it efficiently. Thus, the need to adapt to this new environment requires the development of competencies that directly respond to the challenges that this entails. This is the origin of the term of digital competencies, which is the central theme of this work. According to the Common Framework of Teaching Digital Competence presented by the National Institute of Educational Technologies and Teacher Training:

> Digital competence is described as the necessary set of knowledge, skills and attitudes to be functional in a digital environment and achieve the objectives related to work, employability, learning, free time, inclusion and participation in society; always respecting socially agreed norms of conduct to regulate the use of information and its sources in different media.[1]
Therefore, digital competence does not only focus on the instrumental ability of technology, but also requires knowledge and skills to responsibly access the information available in various digital spaces. According to Stephenson and Yorke "[...] for the use of digital instruments it is necessary to have multiple and complex competencies that timely integrate knowledge, skills and personal qualities, favoring the willingness to accept and open up to new challenges"[2]. The right balance between digital interaction and face-to-face interaction is a key point when talking about digital skills. On the other hand, it is these new challenges that demand a deeper study of communicative competencies, as an essential competence in the digital domain; and especially, the demystification of a native generation which does not fully understand its own limitations and possibilities[3].

As mentioned before, the digital age has created new dynamics in the so-called knowledge society; For this reason, universities, as the creation entity of the same, is the appropriate space for the design of digital skills, which allow citizens to be formed with an ethical and responsible sense of information and use of digital media. As Ricoy, Feliz and Sevillano state, the timely use of virtual tools constitutes a principle of innovation, access to knowledge and professional development throughout life[4].

Therefore, the challenge for higher education institutions is to monitor that students develop the digital skills which are demanded by the world of work on each discipline; so it is questionable to what extent the digital skills that a university student develops during the formative stage, are functional once they enter the working world. The object of study that guides this research centers its attention on knowing the digital communicative competencies that must be developed in professional students during their studies to provide them with the necessary tools that allow them a high performance in their specialty areas and in particular, the competencies for the students of the Tecnologico de Monterrey; taking as a frame of reference the new study programs for the year 2019, an educational system with a national and international presence, located in the first place in the ranking of universities in Mexico.

2 METHODOLOGY

2.1 Context

This project was developed within the Tec21 Educational Innovation Model of Tecnologico de Monterrey, which presents new ways of development and learning for its students; highlighting as a central strength the Challenge Based Learning. With the deployment of this model at the door, the concern arose to precisely define the digital and communicative skills that students should develop during their university studies, which will help them to successfully face their work activity irretrievably immersed in the challenges presented by the current global context. Thus, this study was carried out during the August-December 2018 semester, using a mixed method research. In an initial stage, six interviews with employers were conducted; and in a second stage, surveys were applied to the sample obtained

2.2 Participants

The research began with six interviews with employers. Subsequently, a sample of 147 professionals from different areas and 218 students from different semesters and careers was obtained at the Tecnologico de Monterrey, Campus Querétaro. Regarding the students, we worked with nine groups enrolled in the subjects of Verbal Expression in the Professional Area and Analysis and Verbal Expression; both courses are compulsory for all students of the current careers offered at the Institution and they are related to the development of communicative competencies.

Out of the total of 218 students who answered the questionnaire, their professional profile corresponds to 39% of engineering students, 25% of the business area, 23% of social sciences, 13% of creative studies. There were no students from the area of health because Queretaro Campus does not offer programs with this profile, although thinking about the needs at the system level this information is attached for a future study.

In reference to the range of age, students are under 21 years in 95%, and 5% is over 21. On the other hand, regarding the group of professionals; the age of the interviewees corresponds as following: 43% between 21 to 34 years old; 33% between 35 and 49 years old; 50-64 years old are the 29%, and only 0.6% are over 65 years old.
2.3 Instruments
To begin with, 6 interviews were conducted with employers related to the areas of study offered by Tecnologico de Monterrey. They were asked, according to their experience, about the necessary digital and non-digital communicative competencies for the working world, platforms and networks used, and communication activities commonly required in their daily activities. Based on the information gathered, a team of five experts in the area of communication, authors of this research, designed a digital survey. The material consisted of thirteen questions. The following variables were included in the design of the survey:

- **Professional profile of the interviewee by general areas of knowledge**: Health, Creative Studies, Social Sciences, Business and Engineering.
- **Age range**. Four generational groups were considered given the differences in the use and management of Information Technologies: Silent Generation, Baby Boomers, Generation X and Millennials.
- **Use of social networks, platforms and applications**. Based on the list of social networks and most common platforms used at professional level proposed by the website marketingdecontenidos.com[5] were considered, among others, the following: Facebook, WhatsApp, YouTube, Twitter, Instagram, Google and LinkedIn. An open question was included so that the interviewee could include any other network or platform that was not on the list.
- **Frequency of use at the work level of communicative activities**. To identify the percentage of time dedicated to communication activities at the work level, the following ranks were managed: 10% - 20%, 30% - 40%, 50% - 60%, 70% - 80% and 90% - 100%
- **Frequency of use of communicative activities**: To identify the frequencies of use, the following were considered: daily, weekly, monthly, yearly and never.

Due to the fact that digital competence is closely linked to communicative competence; the survey also included a list of both digital and non-digital communicative activities, present in the working world. They were grouped into different categories: Those related to writing, those concerning informational processes, the ones related to legal issues, those that demand the use of multimedia, the oral ones and those related to organizational or institutional activities.

2.4 Procedure
At first, and to identify the communicative and digital actions that are carried out at the work level, six interviews were conducted with employers related to the careers that are taught at the Tecnologico de Monterrey. Based on the answers they issued, the previously described digital survey was designed. Subsequently, the 218 students of the different semesters and careers were asked to answer the digital survey. Having done the above, and once familiar with the survey questions, each student was asked to interview a professional from his/her same area of expertise using the same instrument. The former with the aim of being able to compare the use of digital skills in higher education and in working life. With this last action, responses were obtained from 147 professionals.

3 RESULTS
The results are presented by making a comparative reading between the two study groups: students and professionals; about what is the frequency of their digital communication activities

3.1 Use of social networks
The results are presented by making a comparative reading between the two study groups: students and professionals, about what is the frequency of their digital communication activities. Starting with the use of social networks, platforms and applications it was observed that the most commonly used networks among students are: WhatsApp (89%), Facebook (64.2%), YouTube (59.6%) and Instagram (45%); while for the case of professionals: WhatsApp, (79.6%) Facebook (50.3%), LinkedIn (38.8%) and Skype (26.5%). For both groups the use of WhatsApp is an important tool to maintain a dialogical and mediated communication. The most used social network for both is Facebook. The differences lie in the use of Skype, where professionals give considerable use (26.5%) and students do not (9.6%). Instagram, today, has an important preference for students and not for professionals and in the
opposite situation is Linkedin, which turns out to be a prominent platform in the professional field but not among the students.

3.2 Written digital communicative activities

The digital communicative activities where writing is used were measured based on the frequency of two exercises: write mails and report results. As one might suppose, the professionals carry out the two actions described in greater frequency on a daily basis (write 75% emails and report results 17%). Likewise, writing formal letters for employees represents 31% weekly, for students is 25% and also say that writing letters is an activity performed annually by 36%. Observing the report results in more extended periods, the professionals achieve, adding the weekly and monthly frequencies, 70%.

Although the students on a weekly or monthly basis practice these writing activities with a similar frequency (writing mails with a combined frequency of 73% and reporting results of 66%); it is not a daily activity that represents an important communication channel for them. Contrary to what some authors think, the new digital competencies require more reading and writing than before but in different media, contexts and languages.

On the other hand, in terms of informational activities, which are responsible for searching, managing and analysing data; professionals are the ones that show the greatest use in all frequencies, which indicates that everyone in the professional world is faced to: the search for information and to follow online instructions. While a quarter of the students reported never having faced the search for information and half of them have never had to follow instructions online. Regarding the management of Big Data, the results are similar; most use it weekly or monthly (students 38% and 22%, and professionals 24% and 20% respectively). These figures are surprising when dealing with higher education students, who should devote a good part of their time for information research and, taking into account the new models of learning; the follow-up of online instructions should be an activity with greater presence.

3.3 Activities related to media production

According to analysis regarding the presentation and production of videos the daily and weekly frequency was higher among professionals (46% and 21%) than that of students (34% and 18%), which shows the integration of the video in the work dynamics.

3.4 Organizational activities

In this area, aspects such as: management of social networks, specialized websites, geolocators and virtual business networks were explored. About half of the student involved in the research, have never carried out these types of activities; while among the professionals it is a third. On the other hand, an activity that was also reviewed was the use of collaborative tools; both students and those who are already in the labor field give it a use of around 60% daily, and only a minority of 6% in both cases, has never used them. It is interesting to see how in some cases the activities are non-existent for young people and are carried out almost daily at professional level. This vision allows to develop the areas in which students should be better prepared considering the requirements of their professional life.

Regarding the differences found related to face-to-face communication; it is noticeable the case of the professionals which exceeds 60% if the daily and weekly frequencies are added, compared to 38% in the case of young people.

4 CONCLUSIONS

The use of new communication technologies in different professional fields demands the study and development of particular skills that have been developed somewhat in daily life routines, but when faced with professional practices, they must be re-learned and adjusted to work environments with different demands and forms.

At this point, it is worth emphasizing the marked differences at the generational level. Each generation faces various challenges related to the use of new technologies and applications. The older generations, somewhat more distant in terms of technology; and younger generations, very familiar with ICT but for personal and non-professional uses; a situation that puts them in a special position to learn to manage these resources in new ways.
When asking both young people and older groups about the most frequent communicative activities, issues arise related to activities such as writing e-mails and reporting results, the learning of these activities are not always considered in university training programs.

For those who work in university-level training, they will have to articulate actions for the development of communicative skills, both in matters related to digital and non-digital environments. The human communication, not mediated, without technological instruments of by means, must be considered in a very serious way in front of the new generations. The forms of face-to-face interaction, active listening, the possibility of having conversations with a certain level of depth, are still important competencies for working.

It should be noted that in terms of audiovisual productions, the development of videos is a competence that is increasingly demanded in both academic and work environments. The easy access to audiovisual resources has allowed the edition of this type of materials to become a highly demanded activity both in organizations and at the academic level. This competence is developing autonomously in most cases.

Finally, there are demands for communicative skills at the business level that are not being considered in higher education, now it is a good time to develop educational innovation programs to, little by little, teach and link this type of content among the youngest.

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