

Digital Immigrants in Distance Education

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Article abstract

The constant growth of methods of education that incorporate the Internet into teaching-learning processes has opened up a wide range of opportunities for students across the world to gain entry to undergraduate or graduate degree programs. However, if the enrolling student is a digital immigrant, the chances of success may be limited by the difficulty of using the Internet to communicate. This laid the groundwork for a qualitative study aimed at determining, from an ontological, epistemological, methodological, and instrumental approach, and from a teacher's perspective, the main technical and communication challenges faced by digital immigrants as they follow an online higher-education study program.

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Digital Immigrants in Distance Education



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Abstract

The constant growth of methods of education that incorporate the Internet into teaching-learning processes has opened up a wide range of opportunities for students across the world to gain entry to undergraduate or graduate degree programs. However, if the enrolling student is a digital immigrant, the chances of success may be limited by the difficulty of using the Internet to communicate. This laid the groundwork for a qualitative study aimed at determining, from an ontological, epistemological, methodological, and instrumental approach, and from a teacher's perspective, the main technical and communication challenges faced by digital immigrants as they follow an online higher-education study program.

Keywords: higher education, digital immigrants, andragogy, online education, social networks

Introduction

Many explanations exploring the consequences of the merging of education and technology have been documented, but it may be Seymour Papert (1993) who sheds light on the matter most simply.

In *The Children's Machine: Rethinking School in the Age of the Computer* (1993), Papert describes the following scene: a group of time-travellers made up of surgeons and teachers from the late nineteenth century come to the present day to discover the changes in the practice of their professions. Whereas the doctors would doubtless marvel at the sterilization procedures, anesthetic, vital sign monitors and other technological advances in a modern hospital, the same cannot be said of the teachers, who may well be unfamiliar with some objects and forms of student-teacher interaction, but would be able to take over the group without any major problems if necessary. Papert uses this hypothesis to highlight how scientific and

technological progress has had varying impacts on different human activities; the impact on exact sciences is considerable and easily visible, whereas in the humanities, changes are barely noticeable.

The world of online education would have gone totally unnoticed by the time-travellers, as it goes far beyond simply installing equipment in a conventional space; indeed, the concept of a classroom takes on a virtual connotation and is transferred to the context chosen by the student to develop his or her learning process. How is it possible to know for sure what people are doing on an electronic device in their living room, at a coffee shop or sitting in the shade under a tree? In truth, they may be doing anything. The hypothetical time-travellers would discover that many people use Internet but not in the same way: they would find substantial differences between those who grew up with technology, and those who found themselves practically colonized by it when they were already adults.

Marc Prensky (2001) rejects the use of nouns such as Generation D (for “digital”) or Generation N (for “net”) to refer to the new generation and its relationship to videogames and the Internet, instead preferring to call them “digital natives.” This term draws a parallel between learning to use new technologies and the natural acquisition of a language, both of which have an impact on patterns of thinking. Those who were not born in this generation become immigrants, and just like with a new language, although they may learn to use the technology correctly, an accent – a reminiscence of the past – will always remain. Although Koutropoulos (2011) criticizes this concept coined by Prensky, he acknowledges that its existence forms a dichotomy in which one group may enjoy privileges according to the particular context.

In keeping with other researchers, Prensky (2001) addressed this situation at the turn of the century. His work was based on the problem of having a digital immigrant teacher working with a group of children accustomed to immediate access to information, graphic communication, interactive tools, and instant gratification. As time passed, the setting gradually changed, and as logically expected, a situation only found in elementary schools in 2001 has finally beset universities, where the equation may be inverted, with a digital native instructing the group and digital immigrants among the students.

This situation should also be considered in the context of a global tendency towards distance education, a method of education that institutes and universities have found to be a comfortable solution to the growing problems of space limitations. Ever more undergraduate and graduate degrees are being offered as blended or fully online courses, where a digital native is expected to perform normally – but immigrants may face a double challenge by having to deal not just with the contents of the curriculum, but also the platform through which communication takes place. This situation highlights the value of efficient leadership, and as a result, this study seeks to ascertain how successful teachers communicate with groups of students partly or wholly made up of digital immigrants, and determine which technical aspects may be challenging in a blended or fully distance-delivered course.

Pedagogy and Andragogy

If the time-travellers, as part of their research into modern-day life, were to listen to a conversation between an elementary school teacher and a teacher in higher education, in all likelihood they would assume that the two are in completely different lines of work.

Despite the shared objective of developing an educational process, the differences between learning in children and learning in adults have been the subject of debate for decades. As a science, pedagogy remains at the forefront of this semantic field that addresses the interaction between a group of students and a teacher in a learning environment.

The gradual discovery of these differences has meant that it has become more appropriate to discuss adult education in terms of andragogy, because, unlike children, adults have accumulated an array of experiences over time that inevitably affect the context in which they learn (Chacón, 2012).

Half a century ago, the educator Paulo Freire (1985, 2006) warned that the role of teachers in adult education was not so much about positioning oneself as the bearer of absolute truths, but rather seeking the conditions for a dialogue, which drives the students to become critical researchers who seek to know the reality. The most favourable conditions for dialogue arise between people who have the readiness necessary to uphold such a dialogue, when students have the desire to take on the role of critical researchers. Torres, Fermín, Arroyo, and Pinero (2000) suggested two categories that synthesize Freire's words and become essential parts in the jigsaw of understanding andragogy: horizontality and participation. The former is defined as an adult's ability to manage his or her learning, which ranges from motivational aspects to questions of space and time, whereas the latter is understood to be the condition that arises from confronting experiences, interaction, and the ebb and flow of information.

Both these categories are influenced by three distinct kinds of factors: personal factors, domestic factors, and external factors. Adults embarking on an educational project in today's world must harmonize the three, and in the case of distance education, they must also face an across-the-board technological challenge.

Although the rhetoric of educational institutions puts the student at the core of their efforts, teachers play a fundamental role, and from the andragogical perspective, are viewed as leaders during the learning process, rather than as teachers giving a class. In "Acompañamiento docente como herramienta de construcción," [Teaching Accompaniment as a Construction Tool], Batlle Rois-Méndez (2010) concludes that teacher leadership should evolve from a traditional, autocratic practice to a participative one, from education verticality to tasks shared by participants, and from quantitative dimensions that provide short-term data to qualitative values that produce long-term results, geared towards what is known, how this knowledge is used, the feelings it produces, and how it is shared with one's entourage.

These dimensions are expressed in terms of being, doing, knowing, and coexisting. This leadership must establish, alongside students, a vision for the future in order to suggest the strategy necessary to achieve goals: efficient communication based on both words and actions, so that all those involved may understand but also believe. In the same paper, Batlle concludes that those who opt to proceed in this manner must be persistent and patient in constructing their own profile.

Digital Immigrants

If the hypothetical time-travellers came and spent time in modern-day society, would they print out e-mails for their perusal so they could make notes underneath? Would they show others a funny picture on their electronic devices instead of sharing a link? Would they read the manual for a computer program instead

of assuming they would work it out as they went along? Would they call recipients to let them know their e-mails had just been sent? Prensky (2001) uses these kinds of actions to describe digital immigrants and explains that they are the result of immigrants having had a different socialization process to that of a native: when a language is learned later in life, the brain stores this information in a different place.

Digital natives are accustomed to immediate access to information, are able to process several things at once, prefer graphics to text, function better when connected, blossom in a context of instant gratification and prefer play to serious work.

Until very recently, it was the norm for digital natives and immigrants to come together in the classroom with fairly well-defined roles: the natives as students and the immigrants as teachers who instructed the group with the same methods that their own teachers used with them.

There is a large pool of research focused on how digital natives should be educated and how teachers should be trained to interact with them, but what about when the roles are inverted? What is the key to teaching when students are digital immigrants (as is often the case today in many graduate programs) and must interact with the teacher on an electronic platform?

In Mexico, starting in the 2013-2014 school year, the Secretariat of Public Education classified students into two categories: on-campus, and off-campus, which covers students enrolled in blended or online courses. As can be seen in Figure 1, in just three school years the percentage distribution of off-campus students increased from 11.93% to 14.02% (Planeacion.sep.gob.mx, n.d.).

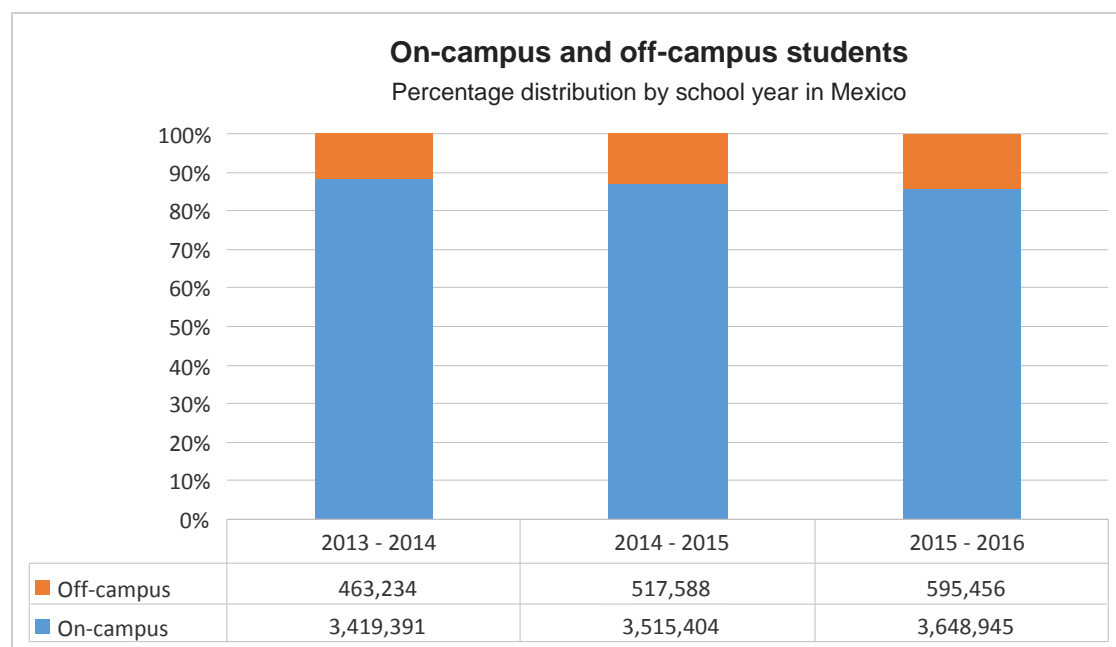


Figure 1. Percentage of students in on-campus and off-campus delivery formats, in the three school years prior to this study. Own compilation, produced from data taken from the *Sistema Interactivo De Consulta*

De Estadística Educativa [Interactive System for the Consultation of Educational Statistics] provided by the Secretariat of Public Education.

Despite the lack of official data to create a distance student profile in Mexico, the wide range of ages is a factor that should be considered, as in the example of the Bachelor of Science in Psychology offered by the *Universidad Nacional Autónoma de México*, in which 47.3% of the student population is over 40 years of age (Gutiérrez & Flores, 2015).

Digital technologies have one special characteristic: they are constantly evolving. It is impossible to say that knowledge in this regard is stable and homogenous enough to be passed from one generation to another. Mariana Landau (2008) states that the simple fact that this change is the only constant places teachers and students in a position where they are unfamiliar with new technologies, and research and analyze them. Therefore, she concludes, there are no correct or incorrect ways to use information and communication technologies in social practice. There are, however, different methods of assimilation, and in this sense, instead of discussing a deficit or people in need of teaching, one must understand that educational institutions develop procedures that are completely different to those used in other institutions in society.

All of this offers a deep explanation of the problem, but in order to take the first step towards concept homogenization, and then progress one step at a time, it is essential to establish minimum values to begin construction.

Research Method

As the study seeks to understand teachers as leaders capable of communicating in virtual environments and students as participants facing unfavourable technological factors, there were two questions addressed in this research:

1. As far as teachers are concerned, how do successful teachers communicate in virtual environments and lead adult groups in courses that are blended or fully online?
2. As for students, what are the technical challenges faced by digital immigrants – whether students or teachers – in blended or fully online courses?

The research design followed the recommendation made in *La Investigación Educativa: Claves Teóricas* [Educational research: key theoretical aspects] by María José Albert Gómez (2007), who considers at least four levels of analysis that make it possible to determine characteristics common to a range of approaches and trends: the ontological level, the epistemological level, the methodological level, and finally, the technical and instrumental level.

At the ontological level, the approach is based on the form and nature of natural and social reality. It is especially necessary when working with the topics at hand to establish a clear view of the current reality in which teachers and students communicate via Internet, with a particular focus on the methods of communication that have achieved the best results.

At the epistemological level, it becomes essential to establish the criteria of truth that validate the definition of “best results,” particularly with regard to communication between people via an electronic platform, as the whole online education system revolves around this communication process.

The methodological level must determine the way in which reality is accessed, and in this sense, using grounded theory as a research method makes it possible to discover concepts, hypotheses, and proposals directly from data, as opposed to a priori assumptions. As stated by Taylor and Bogdan (1987), grounded theory is not about testing ideas, but rather showing that they are plausible. As an approach strategy, the use of theoretical sampling was considered appropriate, and thus, cases were selected for study based on their potential to refine and broaden concepts. Data collection and analysis were performed simultaneously.

Finally, at the technical and instrumental level, it was decided that the best way to obtain the necessary information would be through a series of semi-structured interviews – eight in total – with university-level teachers who, in addition to their work in the undergraduate degree, instruct groups of adults in a program aimed at equipping professionals from different areas with teaching skills in the *Universidad Autónoma de Baja California* (UABC) in Mexico.

The categories that make up the object of the study were constructed from the data obtained in the interviews. Concept maps were made from these categories, which provide a comprehensive view of the results with the support of the Atlas.ti software. A structural corroboration process was performed in order to validate the knowledge generated, since this enables the categories found to support each other conceptually, given that the data collected and the emerging information are bound together and form a whole (Sampieri, Collado, Lucio, & Pérez, 1988).

The interview structure included the following details:

1. The beginning of their teaching career and first experiences working online.
2. Communication with students, from the following perspectives:
 - 2.1. Tools and interaction,
 - 2.2. Differences between digital natives and immigrants,
 - 2.3. Motivation as a factor, and
 - 2.4. The use of social networks.
3. Technical aspects of carrying out educational activities.

The interviews were transcribed and then analyzed using the Atlas.ti software, which is specialized in qualitative research.

Results

The following information emerged after carrying out a triangulation process contrasting the ontological perspective of each teacher, with no other reference but his or her professional experience.

Online Teachers

All teachers had prior experience in face-to-face group classes before becoming involved in developing distance learning activities, which occurred in line with institution policy, which supports this measure as a way of providing more flexibility to class hours, particularly for groups of people committed to blended courses.

Although it is true that the curriculum allows discretion as to the distribution of the number of hours that students must cover, classroom hours in blended courses are scheduled for weekends, as they were initially designed for adults with other productive activities. While this works in theory, experience promptly showed that student performance slumped considerably during the later hours on Saturdays after a continuous ten-hour day of classes. Distance learning activities were encouraged as a way of relieving tension at weekends and allowing students to decide how they distributed their study hours.

In order to introduce the community of the *Universidad Autónoma de Baja California* to this new method, a strategy based on model replicators was implemented from 2009: teachers interested in this kind of work received training, primarily to learn instructional design and how to use the platform and information technology.

Communication

When teachers spoke of the day-to-day dynamics of a blended or fully online course, they gave their opinions on the issues raised: the different kinds of interaction, the differences between digital natives and immigrants, motivation as a factor of success and the growing use of social networks. The results of the triangulation of concepts are detailed below.

Tools and interaction. Teachers clearly identified three distinct situations in which the communication objective makes a specific means of communication desirable.

Communication to describe activities and targets. For this objective, the electronic platform offers the greatest potential as it provides support tools such as a time planner and an inbox for digital files. Here, the voice of the teacher is totally institutional. Order and clarity in expression were described as highly desirable, as it is expected that the students respond in the same manner. This is also the most adequate channel for feedback on assignments received, since electronic rubrics facilitate assessment and inform the student of possible errors or omissions detected.

Communication to resolve queries. Forums are useful for this kind of interaction because often several students have the same question. To this effect, the space is opened at the beginning of each course and students are invited to check if anybody else has already asked the same question. If nobody has, students are told to feel free to use the forum to ask their question, just as if a student were to raise a hand in class. The topics are always academic issues.

Communication to issue notices. Occasional short messages. These could be reminders, recommendations, clarifications of delivery dates, or any other specific action. Even though electronic platforms support group messages – which can either be stored on the platform or sent via e-mail – there is a strong tendency to use social networks.

Digital natives and immigrants. The interviewees agree that an electronic platform is just one more challenge for digital immigrants, as the common denominator is that these students were out of education for years and therefore simply being a student again poses a greater problem, which sometimes serves as a pretext for some students to receive special privileges from teachers. Resistance to technology is gradually disappearing, largely because they have a higher level of responsibility and the fact that they have obligations to meet drives them to acquire the knowledge they need to achieve these goals. Digital immigrants use more formal language and take academic responsibilities more seriously than students who enter higher education straight after high school. This finding is consistent with research by Koutropoulos (2011) who found older students to be more committed and able to switch focus when attempting to find solutions. Any lack of technical knowledge is offset by two positive factors: digital natives within the group who can share their experience with technology, and teachers who do not offer concessions based on age. It is worth noting that the strongest resistance (to electronic platforms) comes from some digital natives, which implies a contradiction. Indeed, while in day-to-day life they are adept at using tablets and smartphones, downloading files, and creating communication material, an electronic platform causes stress and is rejected. The fact that young people include technology in their daily lives does not imply a radical change in their preferences regarding learning styles (Bennett, Maton, & Kervin 775-786).

Motivation. In this regard, various methods exist, but they concur in the importance of having at least one strategy to maintain student interest. The transcription of four specific times when the interviewees addressed this topic is provided in the Appendix.

Social networks. Concerning the use of platforms known as social networks – and particularly Facebook – teachers expressed some misgivings but also expectations for the near future. On the one hand, they offer the advantage that students use these sites to keep close contact. As described by Chugh (2012), these are spaces where members connect with others to share their common interests and preferences. Although they may seem purely recreational, services such as instant messaging have in fact replaced traditional e-mail. In contrast, electronic platforms are only for educational purposes and students log on to them out of obligation.

Similarly, being “friends” (i.e., on Facebook) could mean that personal matters encroach unnecessarily upon the teacher-student relationship. Teachers also warned that this could be a factor in the breakdown of institutional communication, the bulk of which should remain on the electronic platform.

Technical Issues

Distance learning activities go hand-in-hand with computer equipment and ensuring this equipment has access to the Internet, which enables us to explore these two facets.

Hardware. Regarding the computer itself, teachers reject the idea that technical requirements currently go beyond what is considered commonplace, and these requirements are within the reach of

practically any higher education student. It is certainly true that a number of students have limited financial resources, but institutions commonly provide computer centres that offer all the necessary facilities for the student to carry out the assignment requested. In this sense, teacher planning is essential in two respects.

Advance notice. Any activity due the next day compromises the ability of those students who lack the necessary tools at home. However, if students are given enough advance warning, they are able to manage their time and make decisions about how to use the time during which they will be able to carry out the tasks.

Special requirements. When assignments require using specialized equipment or software, students' opportunities are directly proportional to their financial capabilities. Teachers agree that it is feasible to request activities with special requirements so long as they are indispensable for the subject and there is a consensus among group members.

Connectivity. Teachers agree that Internet access is often a problem for students of limited means who lack an Internet connection at home, or for those who live in areas not covered by service providers.

The methodology chosen for courses may compromise success when, for instance, synchronous activities are planned or when content includes multimedia components that require significant resources to download. For example, asking students to read a text and then write a report may produce a vastly different outcome to holding a real-time video conference in which the grade is dependent on the teacher's perception. In the first case, the study content may be downloaded for later use (and may even be printed out), which minimizes technical requirements. In the second case, both teacher and student require devices equipped with a camera and microphone, in addition to the necessary bandwidth to support this activity.

Conclusions

The following conclusions can be drawn from the interviews with teachers:

1. The global tendency towards online education must be anticipated by institutions, regardless of whether they will use this resource as a way of expanding their coverage or providing schedule flexibility in blended courses. The implementation process must identify the need for teachers who are confident about the platform's utility and duly trained to replicate and strengthen the method. With students, the most common strategy is for them to take a subject online at the very beginning of their studies at the institution, the aim of which is for students to become confident users of technology for educational purposes.
2. As far as teacher-student communication is concerned, most efforts should be focused on feedback on activities carried out, which should include a timely indication of student merits and any deficiencies that may have been detected. Response speed is part of formative assessment and, at the same time, motivates students. On the other hand, the growing use of social networks in our day-to-day activities means that it would be desirable to use them as a space where teachers and

students can come together: institutional order and formal classroom communication are reflected in the electronic platform, whereas the routine daily activity of school halls can be transferred to less formal environments, specifically social networks.

3. Digital immigrants certainly face challenges in using technology, but once the procedure for interacting with the platform is mastered, the results obtained may be on a par with, or even better than, those achieved by digital natives. The order and discipline that come with maturity effectively offset any possible lack of knowledge about the methods used, so long as teacher planning and leadership are well-focused because otherwise any error due to syllabus planning or teacher leadership may become a negative experience for students.
4. There is a strong link between the technical requirements demanded of students and the subject design because, on the one hand, reducing the level of synchrony in activities minimizes risks due to intermittent Internet connectivity or low coverage in rural areas and recent settlements. Furthermore, although computer equipment is becoming increasingly affordable, and includes multimedia components such as speakers, a microphone and video camera, using these resources remains optional, which is a decision taken when course activities are planned.
5. It is recommended that, at the beginning of a course, students are identified as being at risk of having their progress and content assimilation compromised by the fact they are digital immigrants. If that is the case, keeping instructions as clear as possible, simplifying instructional design, and minimizing (or eliminating) synchronous activities may go a long way toward reducing the chance of academic failure. Acknowledging that others may face unfavorable conditions goes beyond the functions of teaching; it is a human duty.

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Appendix

Extracts from Interviews in which Teachers Discuss Motivation Strategies

I have rubrics and I always give positive comments in my feedback. I believe teachers should give continuous feedback, and if feedback is rushed, students get the feeling that they are being graded. If feedback is left until the end, there is no motivation to continue learning and submitting assignments. Another thing is – and in this regard I set the example – if everything is well organized, students will be more organized. (Interview 1)

They are adults and they know what they have to do. For some time now I have tried to motivate them through socialization and sharing what they do. In all my groups, students share their final assignment with somebody else. In one group, we set up an exhibition and other groups went to see the final assignment. Another group gave a sample class. I ask some other groups to create a webpage with their suggestions. Other groups went to provide training outside of the university. I want them to feel that what they're doing is going to be useful and has a purpose that will help somebody else, and this can rub off onto others. It's never about self-interest... you're learning to help somebody else. (Interview 2)

From time to time I tell them that their efforts are praiseworthy, as is the fact they are making an extra effort by sacrificing other, more enjoyable things in order to achieve what they have set out to do. I express my acknowledgment and I get the impression that this is effective whether it is given publicly or on a private basis. The responses I have obtained from this procedure have been very motivating for me too. (Interview 3)

I think that for both kinds of groups (natives and immigrants) the activities need to be appealing, and without being demanding, the task at hand should appeal to students... it also needs to be interesting and clearly show what students will learn. It is difficult to warrant the use of any student activity, whether simple or difficult, without knowing its objective. (Interview 4)

