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Pedagogy and ICT in Crisis Situations or the Games and Issues of a Win-Win Relationship

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Abstract:- "Let a micro-processor never become a micro-professor". This allegation by Francis Meynard (1989) certainly reflects the relationship of complementarity or conflict that may exist between teaching and digital technology. In fact, the present research is interested in the presumed or proven problematic between pedagogy and Information and Communication Technologies (ICT). In a more subtle but demonstrative way, the aim is to study the tangible and/or alleged contributions of ICTs in the various teaching-learning methods of secondary school learners in priority education zones (PEZ), in a crisis situation. Three data collection tools allow us to carry out this work, namely non-participant observation, the semi-directed interview and finally the documentary exploitation. The results that emanate from this work reveal a triptych: firstly, convergent as well as divergent characteristics of the two notional approaches in these places, secondly, an incapacity of ICTs for a conjunctural pedagogy, and thirdly, a rigorous conditioning of ICTs for an improved and continuous pedagogy in a crisis situation in PEZs.

Keywords:- *Pedagogy, Information and Communication Technologies (ICT), Crisis Situation, Win-Win Relationship, Priority Education Zones (PEZ).*

I. INTRODUCTION

Cameroon, a Central African country, has many PEZs which are mostly located in the Far North, North, Adamaoua, East regions, etc. Many localities in these regions are classified as PEZs by virtue of the various natural or cyclical disasters that they experience and/or undergo, particularly climatic, security, epidemiological, etc. These various disasters, which indirectly generate crisis situations, are pushing the State to consider alternative methods of managing the education system, particularly the intrusion of machines into the lives and habits of people (Linard, 1996[1]) in a context where education is presented as a fundamental right 'for all' (Lange 2003, p. 149 [2]). Bouilloud (2012, p. 155 [3]) sees crisis as an unexpected event occurring in a limited space of time that disrupts an existing balance. While for some such an alternative has been more of a conjecture (Depover, 1996) with regard to correlated costs and other reasons, others (Pouts-Lajus & Riché Magnier, 1998; UNESCO, 2004) have been quick to see it as a solution to the countless flaws generated by the various crises in these areas. Indeed, most theories on teaching and learning in the 21st century give pride of place to ICT (Tardif, 1998; Lebrun, 2007), establishing a kind of tacit but imperative congruence between pedagogy and information and communication technologies. Today, there are many problems in this area to evaluate the existing or likely relationships between pedagogy and ICT in African contexts (Karsenti, 2003a; Karsenti, 2003b). In this regard, while some people label the use of ICT in education as a

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major, if not unavoidable, element of development (Fullan, 1991; Grégoire, Bracewell & Laferrière, 1996; Intsiful, Okyere & Osae, 2003, Depover, 2009), others are absolutely critical in this area in order to ensure appropriate pedagogy (Isabelle, 2002). In fact, as Depover (2005) rightly states, is there a place for ICT in African schools? If so, what are the conditions for their intrusion into the educational environment to generate win-win relationships? Does the intrusion of machines into education, specifically in a crisis situation, render teachers' time obsolete (Novoa, 1987)? Or does the integration of ICT into teaching constitute an added value acting as a booster (Depover, Karsenti & Komis, 2007) in the teacher's teaching-learning methods? There are still countless issues that identify ICT as the preferred tool for teaching and learning (Chenevez, 2000), especially in crisis areas or situations. Whether it is the collapse of barriers inherent in distance (Boltanski, 1993) and the related teaching-learning activities (Association for the Development of Education in Africa, 2002; Becta, 2005) or the untimely situation, the emergence of ICTs in the school environment seems to constitute a catalytic base through which pedagogical processes are improved (Becta, 2006a; Becta, 2006b; Becta, 2007).

A. *The context of poverty in the schools of the Eastern PEZs*

The context of this research draws its originality from the specificities of our spatial field of study, which exposes highly deleterious conditions. Indeed, the areas of Eastern Cameroon, bordering the Central African Republic, and specifically the PEZs of Gbitti and Kétté, offer us the double face of disaster areas and crisis areas in which the state could initiate a pedagogy in congruence with ICTs, for an optimal achievement of its objectives in education.

➢ *Support for PTAs and other Disaster Areas*:

The issue of support for PTAs is predicated on the context and other specificities surrounding the correlated PEZ. Mastafi (2016, p. 183[4]) considers ICTs as 'a set of technologies mainly consisting of computing (hardware and software) for processing and storing information, microelectronics, telecommunications, and networks in particular, for exchanging, sharing and transmitting information'. Duguet & Morlaix (2017, p. 7[5]) refer to them as 'all digital hardware, software and services that can be used to teach'. In this respect, the distinctive contribution of ICT to education in PEZs constitutes a 'meta-synthesis' (Barrette, 2005) whose repercussions on teaching-learning processes generate a definite added value. Mounet (2008, p. 13[6]) bases it mainly on 'the attention and motivation of pupils'. Building on Morin's model, Raby (2004, p.345 [7]) "Revised model of the ICT integration process" proposes a progressive pathway based on major factors such as awareness, personal use and professional use. However, a multitude of obstacles stand in the way of the feasibility and development of strategies to improve support for PEZs to enable more appropriate and successful education. Bibeau (2006) classifies them in a way that is relevant to the degrading factors, despite the fact that some people dwell on the real contribution of ICT to school learning, disregarding the related obstacles (Bracewell & Alii, 1996). It is clear that timely support for PEZs in an ICT crisis is the right way to move from conventional education to a 'situated' education that incorporates the specificities of the environment (Clarck & Dunn, 1991). The popularisation of ICTs and digital practices in PEZs in crisis situations undoubtedly paves the way for the promotion, popularisation and use of digital libraries (Ferran, 1996; Guédon, 1998; Pettenatti, 1996), a guarantee of autonomy and empowerment of learners. The action strategies that are themselves aimed at the integration of ICTs in Africa and specifically in Cameroon become in this context the Gordian knot without which education can neither develop (Kolyang, & Mvondo, Mvondo, 2013), nor achieve a saving propagation of e-learning in such a problematic context. This becomes the *sine qua non* condition for the transformation of ICTs as "technical objects and tools for the transmission and management of data or information" (Tiemtoré, 2007, p.2 [8]), as well as for their formalisation for the popularisation of pedagogical practices in difficult contexts.

➢ *The Introduction of ICTs in PTA Schools*

Although the integration of ICTs has never been envisaged in antiquity because of any anachronism (Marrou, 1981) inherent in the invention of the related tools, the teaching profession has undergone a certain change over time and space (Merieu, 1990), imposed precisely by contextual and situational factors: Crises and conflicts such as Boko Haram in North Cameroon, impoverishment or low standards of living of the populations, mephitic health situations such as COVID 19. These are all epiphenomena and phenomena which, in the short, medium or long term, constitute opportune elements for the introduction of ICTs in schools (Morin, 2010; Mvondo, 2013, Peraya, Lombard & Bétrancourt, 2008) in PEZs, precisely in disaster areas such as those targeted by our study. Thus, for Mangenot (2000, p. 40 [9]), 'the integration of ICT is when the computer tool is used effectively for learning'. Of course, such initiatives do not emerge ex-nihilo and, on the contrary, require timely prior preparation (Raby, 2004) that takes into account many contextual and situational parameters such as those set out above. Klein's (2013) assessment is very timely when he notes that the use of digital technology in education generates several effects: 'Beyond this happy, indirect, psychological effect, digital technologies, in their pedagogical uses, are fully-fledged learning tools, profoundly modifying the strategies of students to learn, and of teachers to teach' (Klein, 2013, p. 8 [10]). Guichon (2012, p. 9 [11]) further specifies these effects in the language domain when he states that: "ICT can bring added value to the development of language skills". Pouts-Lajus et Riché-Magnier (1998 p. 75 [12]) follow suit when they state that "Networks... create particularly motivating situations for learning", especially in crisis situations. Moreover, if we consider, as Tiemtoré (2006, p.171 [13]) emphasises, ICTs as 'technical objects linked to specific activities: work, information, communication with others, learning', their integration into teaching practices can no longer be limited to 'teaching computers and software' but, rather, must go beyond that 'to teach various disciplines' (Karsenti, 2009a, p. 9 [14]).

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II. RESEARCH PROBLEM

The relationship between pedagogy and ICT in a crisis situation is a game whose stakes are likely to generate enormous added value in terms of gains.... In fact, a crisis situation generally refers to "a sudden, unexpected and extraordinary event" whose effects may lead to the inability or inconsistency of the members of the educational community to manage it properly, thus requiring the involvement of a higher authority. This is a serious incident, the repercussions of which generate a kind of breakdown in daily habits and customs, with threats of "destabilising all or part of the educational community (administrative staff, teachers, pupils, parents), which may go as far as calling into question the school and the fundamental values on which it is built". Several factors can de facto lead to such a situation, in particular endogenous factors (stability of the teaching and/or educational team, balance of timetables, types of relationship between members of the school community, etc.) and external factors (geographical context of the school).) and external factors (geographical, socio-cultural, economic-political context, health situation...). In the case of our study, the relationship between pedagogy and ICTs is mainly based on the security crises in Eastern Cameroon and the impact of the COVID 19 pandemic. How are pedagogy and ICTs characterised in crisis situations? Do ICTs succeed in stimulating or compensating for effective situational pedagogy in these crisis zones? How should or can ICTs be used for improved and continuous pedagogy in these areas?

A. Educational Processes in Crisis

The 1980s saw the intrusion of a major innovation, namely the 'global education agenda' (King, 2007 [15]) which henceforth enshrined access to and improvement of education and health as a major criterion for economic growth. Indeed, many authors now note the close parallel between education in conflict situations, and in particular the quality of the education provided, the conditions in which these processes take place, and more importantly, the instruments adapted for their implementation (Bush and Saltarelli, 2000; Lanoue, 2003; Lanoue, 2007; Azoh, Tchombe and Lanoue, 2009). Educating in the context of a crisis is not a given, given the many risks involved both during and after the crisis (Davies and Talbot, 2008; Davies, 2004; Davies, 2005). Thus, many authors consider that teaching-learning methods in crisis areas or periods cannot be the same as in non-crisis areas or periods (Forced Migration Review, 2006). Indeed, the globalisation of education (Lange, 2003) infers new implications whose substance supports state policies that adopt strategies open to external interventions (Lange, 2001; Novelli, 2009; UNESCO, 2002). Among the studies that acknowledge the primacy of education in crisis situations, some downplay the leading role of the state and correlate it with that of NGOs (Chelpi-Den Hamer, 2007); others see it as a credible source of patriotism or nationalism (Foucher, 2002); Others see it more as a way of involving families as the substratum of all education (Mrsic Garac, 2007; Lange and Pilon, 2009) or as the basis for all socio-educational cohesion (Tawil and Harley, 2003), or as establishing a strategic partnership between civil society and education (Petit, 2010). In any case, the critical reading of pedagogy in crisis or emergency situations (Kagawa, 2005; Paulson & Rappleye, 2007; Novelli & Lopes Cardozo, 2008) exposes the various impacts of these situations on learners, specifically children (Machel, 1996), the different goals or other objectives to be achieved (Johnson & Stewart, 2007; Lenzer, 200l) and also the urgency that covers such a construct (Stort l, 2004). These pedagogical processes adopted and adapted in a crisis situation are all the more crucial as they allow "to search for, store, process and transmit information (...)", but above all ensure "interactivity between people, and between people and machines" (Basque et Lundgren-Cayrol, 2002, p. 264 [16]; Karsenti, 2005, p. 34 [17]). Thus, pedagogical processes become the teaching-learning activities carried out via "digital technological equipment" (Ait Kaikai, 2014, p.35 [18]). These processes nowadays integrate numerous determinants, both "sociological" and "psychological" (Hussenot, 2006, p.3 [19]) resulting from the ambient situation prevailing at the time of its implementation. It is essentially a question of 'an education and research system that integrates information and communication technologies and is therefore effective, efficient, equitable, balanced and engaging, adapted to the country's socio-economic context and to the challenges of globalisation and the information society' (MDENP, 2013, p. 15 [20]).

B. Different Skills for Teachers in PTAs or Crisis Situations?

Some authors identify specific characteristics of teachers in crisis areas or teachers in crisis, arguing that special situations require special skills (Sinclair, 2001; Rufin, 1994; Ryfman, 1999; UNHCR, 2003; INEE, 2001; INEE, 2004). Nicola & Tripelhorn (2003), Sommers (2002) and Save the Children (2008) find that education has a protective role for learners in crisis areas, while others find that its aims are far more positive (Paulson, 2008; Paulson, 2007) to the point of contributing to reconstruction and/or development tasks (P1oozi, 1999; Übura, 2003). The pursuit of these objectives remains conditional on the adoption of a set of good practices (Rose & Greel, 2006a) that are essential to the achievement of these goals. Furthermore, the primacy of prior and diverse competences among pedagogues becomes a major factor in the enjoyment of ICT according to "the learner's impulses", according to "the cognitive functions supported by the technologies" and finally according to "the stages of the human process of information processing" (Basque et Lundgren-Cayrol, 2002, p.274 [21]). Beyond skills, Depover et al. (2007, p. 7 [22]) refer to "tools with cognitive potential (OPC) ... which can play a role ... leading to the development of high-level skills" in contexts of application that are not always appropriate. Among these competences, the "informational" ones occupy a major place because they allow the actors, both teachers and learners in this case, to express their "need for information, to identify the adequate information, to find it, to evaluate it and to exploit it in relation to a given situation, in a problem-solving perspective" (Chevillotte, 2005, p. 43 [23]).

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C. Research Objectives

In line with our research questions, this study aims to correlate the relationship between pedagogy and ICT in crisis situations in order to highlight the games and identify the related issues. Thus, the data resulting from our research will help to identify the convergences and divergences of the two notional approaches in a crisis situation or zone, to identify the reasons for their inanity in a paradoxically demanding environment, and finally to propose the appropriate strategies for an effective partnership of the two phenomenological approaches.

III. METHODOLOGY

The present qualitative research, which is intended to be descriptive from a grounded-theory perspective, aims to explore an area where theory is likely to emerge from the data collected. In fact, Paillé et Mucchielli (2003, p. 133 [24]) consider that "all qualitative analysis requires a certain form of thematisation". Accordingly, we will present here the typology of the research that guided our methodological choices, then the participants, the conduct of the research, the methods of data collection, and finally their processing.

A. Collaborative Research As A Typology Of Research

This research was conducted in collaboration with primary (ENSP) and secondary (ENSS) teachers in order to have them helping us to identify the real nature of the correlation that exists or is likely to exist in the partnership between pedagogy and ICT in crisis situations in PEZs. Our approach is inspired by Liberman (1986, in Desgagné et al., 2001), whose idea is to do research 'with' rather than 'on' practitioners, in other words with teachers in the above-mentioned East Cameroon PEZs experiencing crises. In fact, with the collaboration of these teachers, we will construct the research data to try to understand what the above correlated relationships consist of in order to be able to identify elements of a solution (Van der Maren and Poirier, 2007). This double collaboration between practitioners and researchers allowed us to obtain a triple likelihood criterion of the social relevance of the results produced.

B. Conduct of the Research

Overall, our documentary data collection, observation and interview phases took place during the months of August and September, during which we were able to glean the essential information.

➢ *The Participants:*

Seven primary and seven secondary school teachers from crisis-affected PEZs, notably Kentzou and Gbitti in the Kadey Department of eastern Cameroon, participated in the research. Chosen on the basis of their long-standing presence in the area, they took part in the research on a purely voluntary basis. The gendered approach is also respected here, as there are five women out of the twelve teachers, three from the primary and two from the secondary level. The seven primary teachers were from seven different schools in the PEZ, while the seven secondary teachers were from three different secondary schools.

➢ *Data Collection Methods and Instruments*

Three main methods were used to collect data, namely non-participant observation, semi-structured interviews and documentary analysis.

- Non-participatory observation: This method was chosen because of its ability to allow us to describe, document and analyse the various relationships that exist or are likely to exist between pedagogy and ICT in PEZs in crisis situations, without necessarily being present at the teaching-learning activities or at least influencing them. It was agreed that one of the observers would focus on the activities of primary school teachers while the other would focus on secondary school teachers. The principal researcher focuses on being available and close to both for possible clashes. The observers also play the role of post-observation interviewer in order to clarify any grey areas relating to the implementation of ICT in PEZs in a crisis situation and its impact on the pedagogical processes and procedures applied there. To this end, and in the impossibility of taking digital audio recordings, detailed notes are taken under the supervision of a research professional to minimise the risks of loss, distortion or distortion of the information. It should be noted that this rendering is then adjusted at the convenience of the research professionals for the purposes of the case.

- Semi-structured interviews: The option of semi-structured interviews seemed to us to be appropriate given its capacity to allow our respondents to approach the problem identified from various angles. This approach was all the more beneficial as it allowed us to compare the data collected in order to identify convergences and divergences in the main themes addressed by our respondents. The data was collected from primary and secondary school teachers at the same time, depending on the availability and accessibility of our respondents. Thus, the interviews began during the August 2022 holidays with the teachers in place, and ended in the second week of the start of the school year in September 2022-2023 with the return of the greatest number from the holidays. Initially agreed to be 20, only 14 were available for our study, as we found it appropriate to multiply the interviews, having found that the data collected was very similar regardless of the schools. The interview guide focuses on the comparative contributions of pedagogy and ICT between convergence and divergence in a crisis situation, on the factors behind the inability of ICT to underpin a crisis pedagogy, and finally on the appropriate strategies to be adopted to achieve an improved and continuous digital pedagogy in a crisis situation in PEZs. Some digital audio recordings were made with respondents who consented, although most of our respondents objected to this because of suspicion about the subject matter. Field notes were then used to provide information on the various data observed, the apprehensions relating to the subject, the inherent difficulties or possible solutions.

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- Documentary exploitation: The relevance of its choice in our study stems from the fact that there is an abundance of literature that deals precisely or collaterally with our theme, so as to be able to further support our co-construction. Therefore, it consisted here in selecting and analysing the available works most related to our problematic and in establishing the correlation in a win-win or no-win perspective.

C. Data Processing

This sequence is specifically dedicated to the transcription of the verbatim, data capture and identification of participants, coding and categorisation of meaning units.

➢ *Transcription of the Verbatim:*

This concerns both the translation, interpretation and the raw and faithful transposition of information from the various interviews and discussions, with the exception of laughter, silence, onomatopoeia and hesitations. This exercise was carried out by a transcriber after checking the verbatims and digital audio recordings to ensure that the transcriptions corresponded to what the respondents said.

➢ *Data Entry and Identification of Participants:*

Our collected data is the construct of Atlas ti 5.0. software through which the coding activity was carried out under a precise nomenclature outlined as follows: ENSS3 as an indicator for "secondary school teacher No. 3; ENSP1 for primary school teacher No. 1; ENSP5, 8 for primary school teacher No. 5, paragraph No. 8. The need for this coding was precisely to preserve the anonymity of our respondents and the confidentiality of their words, in accordance with the law on surveys and polls. Therefore, the presentation of the results will take into account quotations from some of the content of our verbatims deemed relevant enough to illustrate our analyses, which are shown in italics.

➢ *Coding:*

This mainly enabled us to delimit the units of meaning from the various speeches in order to obtain more restricted signifiers that have a fairly complete meaning. Thus, sentences and paragraphs were listed whose meaning or significance was sufficiently eloquent to expose the objective of our research. The effort then lay in the ability to code each of these units of meaning in a concise manner, while preserving their initial meaning, which was essential for the subsequent categorisation stage. This entire work phase was carried out under the permanent prism of a permanent verification aimed at reducing the risks of falsification or error.

➢ *Categorisation of the Units of Meaning*:

After coding, this stage makes it possible to broaden the various statements likely to suggest a common or identical meaning independently of the different formulas used. In our work, it consisted in classifying our meaning units under a thematic angle called "category" to extract the real meaning of the discourse. The examination and analysis of our data will, so to speak, consist in intensifying the precision and stability of the data for a better validity of the results (Miles & Huberman, 2003, p. 62 [25]).

IV. PRESENTATION OF THE RESULTS

The multimodal approach adopted in our research leads to several results that we will methodically present according to a triptych characterised by the results of the observation data, then those of the semi-structured interviews, and finally those of the documentary analysis. This diagram, as it stands, shows converging characteristics with diverging specificities, from an incapacity of ICT for a cyclical pedagogy to a rigorous conditioning of ICT for an improved and continuous pedagogy in a crisis situation.

A. Pedagogy and ICT or Converging Characteristics with Diverging Specificities

➢ *Converging Characteristics…*

With regard to the relationship between pedagogy and ICTs in health, security or other crisis situations, it is observed that their characteristics are congruent, and that their potential and parameters seem to be homogeneous: *"There is a pedagogical background to ICTs by virtue of the fact that they contribute equally to the education of learners"* (ENSP 3, 3). This understanding is also shared by Draxler & Haddad (2002), whose description of the potential and other parameters of ICT provides good support for pedagogical practices in this area. In fact, it is a question of establishing a certain osmosis between the two elements, the congruence of which further refines and enhances the teaching-learning processes in critical situations. The other convergence seems manifest through the correlated stakes of multimedia, the observation of whose use in schools points to a revival of learning via the qualitative improvement of teaching*: "...A pedagogy based on ICT ... has a strong chance of improving the performance of learners ... because of the obstacles that these tools enable it to overcome ... ICT increases the capacity to illustrate the lesson as much as it annihilates the distances"* (ENSS 2, 5). Pouts-Lajus & Riché-Magnier [26] provide a good illustration of these multimedia issues in their description of "school in the age of the Internet". Thus, the teaching-learning process uses ICT as a catalyst firstly to get around the difficulties inherent in contextual and situational hazards, but more to make up for the shortcomings that pedagogy without technology shows. Ultimately, a certain linkage arises from the procedures and processes for integrating ICT in education. Indeed, a certain degree of appropriateness is observed in the field in the use of these technologies, which become prized and indispensable for teachers and learners once they have really started using them: *"ICTs are special in that they act like a drug... because they generate a kind of addiction as they are used... The teacher and even the learner end up appreciating them to the point of not being able to do without them... according to their means"* (ENSS1, 4). Depover & Strebelle (1996 [27]) found in this wake *"a model of integration of activities related to new information technologies in educational practices",* believing that one supports the other and vice versa.

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➢ *With Divergent Specificities*

Observation of the specificities of the two realities reveals, despite the congruencies noted above, numerous divergences that are visible, among other things, through the discomfort observed among many teachers in using these technologies. *"Coherence between pedagogues and ICT ...presupposes a good command of the uses of these tools...Also, failure in this area inevitably generates a certain divergence which distances...one from the other..."* (ENSS3, 7). It is undoubtedly along these lines that Buzhardt & Heitzman-Powel (2005) recognise the effects of the gap between pedagogues and technologies in the educational environment. Similarly, and following the same trajectory, another divergence can be observed in the practical, everyday use of ICT in education, due to the fact that demand is permanently greater than supply. In fact, while there is some evidence of the desire of both learners and teachers to use ICT in their daily practices, there is unfortunately a lack of use, which is undoubtedly due to both contextual and situational factors: *"everyone would like... to make regular use of ICT, given the difficulties of the time... and the facilities offered by these tools.... Unfortunately, certain realities ... prevent full use of them" (*ENSP4, 8). Peck (2001) describes this fact and tries to explain the paradoxes as best he can, pointing out the disadvantages that such a reality generates in the teaching-learning process. Divergences are also noted at the level of the establishment of a certain adequacy aiming at making one the vector of the other. Guihot (2010[28]) describes it in this respect as a "difficult encounter" whose sometimes easy access does not prevent it from being difficult to use, given the grievances previously mentioned (Cuban, 1997; Cuban, 2001).

B. The Inability of ICT to Provide Effective Short-Term Pedagogy

➢ *Contextual and Situational Obstacles*

The specificity of the environment or the crisis affecting a given environment requires the implementation of specific measures, including situational pedagogy. However, on observation, ICTs, which seem to be the tool of choice for this purpose, suffer from a blatant inability to establish this pedagogy, as illustrated by the following words of an educational stakeholder*: "There are many obstacles which do not favour effectiveness: poverty of the population, connection difficulties, etc."* (ENSP 1, 11). Many authors also point this out in credible studies that aim to put the effects of ICT in education into perspective, because of the related obstacles (Tunca, 2002; Maiga, 2010; Trestini, 2012). Indeed, connecting to the Internet in a crisis situation is not easy, precisely because of the difficulties inherent in the crisis situation. In this regard, it is observed that having a smartphone in these places and situations is not synonymous with being able to connect. *"Being online or going online is a luxury that is not available to ordinary people*" (ENSS5, 13). Becker (2000 [29]) aptly describes this when he points out "who is wired and who is not" precisely to correlate education with its accessibility. In the same vein, Valenduc & Vendramin (2006) note the inherent implications of digital divides and all their corollaries in terms of obstruction to digital education. This reality also tends to generate an impression of hoax among the correlated actors precisely because of the mismatch between supply and demand. *"As much as learners are in need of ICT provision...the difficulties in achieving this are obvious..."* (ENSP3, 12). Loiret (2008 [30]) confirms this configuration when he describes distance learning as "trompe-l'oeil". In fact, the difficulties inherent in the implementation of digital education make it a virtuality whose materiality becomes problematic and therefore a non-evidence. This problem is further amplified by Rogers' study (2000), which identifies and lists a range of factors that are highly detrimental to the integration of ICT in education.

➢ *Highly Alarmist Apprehensions:*

The above-mentioned inability to use ICTs also has its roots in the fears that many teachers have of them. In fact, *"digital illiteracy constitutes in this environment a hard core of the difficulty of implementing an effective prior pedagogy''* (ENSP 5, 14) that can counteract the above difficulties: *"Many teachers do not cope with these machines...Their use is not really easy...and training is needed to master them"* (ENSP7, 13). Authors such as Cuban (1999) and Snoeyink & Ertmer (2001) make much of this malaise among teachers who, in the absence of retraining or adequate training, find themselves in unspeakable difficulties in linking pedagogy and ICT. The description of their behaviour when using these technologies shows a certain hesitancy resulting from a lack of training in this area (Tamboura, 2010). Thus, feelings vary between suspicion, incomprehension, unease but also tacit approval, willingness to act or to adopt the tool as noted by authors such as Gentil & Verdon (2003), Coulibaly, Karsenti, Gervais and Lepage (2010). This is all the more glaring given that this phenomenon is not necessarily foreign to higher education (Pajo & Wallace, 2001) where many barriers also exist.

➢ *Conjectural Inputs:*

The other side of this inability of ICT to produce an effective pedagogy is clearly evident through the largely hypothetical contributions that oscillate on its deployment in crisis situations and/or zones: *"Even if you master the use of educational technologies..., you may not be able to have a machine..."* (ENSS7, 11); *"Sometimes you know how to use a tablet but you can't do it because the environment doesn't allow it...Lack of connection..."* (ENSP6, 14). Cuban, Kirk Patrick & Peck (2001[31]) corroborate this posture, which they rightly or wrongly describe as an "apparent paradox" that does not favour the integration of ICT in improving teaching-learning practices. Zhao & Frank (2003 [32]) in the same vein, describe these 'innumerable factors' that prevent the 'maximum integration' of ICT in education, believing that it is a 'non-use' that is highly detrimental to the teaching-learning process (Daguet & Wallet, 2012), with all the associated consequences. Consequently, only a rigorous conditioning of ICT can ensure a pedagogy that is sufficiently improved and credible to curb all the shortcomings inherent in its non-use in a crisis situation.

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C. Rigorous Packaging of ICT for Improved and Continuous Pedagogy in Crisis Situations

➢ *Building Professional Attitudes:*

The first requirement for developing improved and continuous pedagogy in crisis situations is to build professional attitudes among teachers: *"A teacher who does not master the use of ICT ... will have enormous difficulties in practicing his or her profession..."* (ENSP7, 12). *"Only recurrent learning...or regular training in the subject can equip the teacher well and enable him to improve his practices in crisis situations"* (ENSS4, 16). Lameul (2008 [33]) is also very interested in this, believing that such a learning and training posture can only lead to "positive effects" for both teachers and learners, through "real professionalisation". Some authors, such as Deaudelin, Lefebvre, Mercier et al (2005) and Raby (2004), follow the same line of thought when they argue that only criterion-referenced training governed by compliance with specific stages can enable teachers to reach the expected threshold of ICT use. Still others believe that such a posture must be implemented among school principals and, moreover, by themselves as well (Isabelle, Lapointe & Chiasson, 2002; Isabelle & Lapointe, 2003, Onguéné Essono, 2005) and even raised to university level (Bouzidi & L'hadi, 2005; Lebrun, 2004).

➢ *The Collectivisation of Professional Attitudes:*

The construction of professional attitudes as noted above must, according to many of our respondents, obey a collectivist scheme for better pedagogical results: *"We must not train one teacher...or two teachers...We must train all teachers in the use of ICT..."* (ENSP4, 17). (ENSP4, 17). Many authors (Karsenti, 2001; Karsenti, 2005; Becker, 1994; Fonkoua, 2009; Lebrun, 2004; Bérudé & Poellhuber, 2006) opt for this alternative when they note the urgent need for a global and not a piecemeal approach that can dissociate teachers trained in ICT from the rest, while minimising this second wave in favour of the first.

➢ *Plan and/or Anticipate Differentiated Teaching:*

The imperiousness of such an approach is based mainly on the specificity of the situation, which consequently requires a specific attitude in the teaching-learning process. *"This would also allow to anticipate appropriate devices to face them"* (ENSS3, 19). "...The ability to anticipate a pedagogy adapted to the context ...or to any crisis situation can boost learners' performance". Jobin (2007) also champions this theory, which he bases on its real capacity to boost learners' abilities in contexts that are not always appropriate.

V. DISCUSSION

The reactions to the summary content of the characteristics present in the literature raise special questions about teaching-learning processes in crisis situations: Can ICT really have a pedagogical impact favourable to win-win relationships, given the unfavourable contextual and situational realities? If so, why do pedagogues in these situations and/or areas feel that ICT is not a priority? Why do they persist in this assumption despite the relevance of research findings that paradoxically demonstrate the indispensability of such a tool in education and especially in these situations? Why is the priority increasingly given to the integration of ICTs to the detriment of the establishment of a 'differentiated pedagogy' or 'situated pedagogy' which does not give pride of place to machines, but rather to pedagogues? Can the intrusion of machines into education really have a major impact on learning without real and consistent consideration of the training of people in these disadvantaged environments and critical situations? What about the win-win relationships that are supposed to sanction such collaboration? The simulation of a few responses to this flurry of questions illustrates a somewhat fussy posture on the part of the pedagogues themselves and also of a certain literature that seems to be very unclear about the agreed or appropriate place of ICT in this context (Depover, 2005). While they essentially recognise the obvious need for and importance of ICT in education, this position seems less clear-cut when it comes to the pedagogical approaches practised by the latter. This is not because of any lack of usefulness in the use of the tool, but apparently because of the lack of preparation or assimilation of these technological materials by the latter. Whether it is a question of interview analyses or of the literature review, the positions of the latter seem to be more in conflict with the use of these tools in classroom practices, rather than integrating them straight away (Ertmer, 2005; Ben Abid-Zarrouk, 2012). Of course, the reasons that justify these positions are by no means illogical if we take into consideration the contextual and situational difficulties noted (Shafika, Broekman & Mogale, 2005).

It is therefore clear that pedagogy remains the priority, and more so a 'situated', 'contextualised' or differentiated pedagogy that can take into consideration the crisis situation or the related context, while placing the teacher at the center of the process. The question of the teacher's acceptance or refusal to use ICT in a crisis situation is therefore not the primary issue here, in accordance with "computer usage behavior" (Davis et al., 1989, p. 983 [34]). Indeed Depover (1999 [35]) has shown that "it is clear that the teacher must take the lead role in shaping the technology to meet his or her needs, for the greater benefit of the learners". However, the integration of ICT can only boost such a postulate by facilitating its application, notwithstanding hazards that are not always favourable. To achieve this, it is obvious that certain correlational elements must be put in place or at least taken into account, in particular good network coverage, easy access to the Internet, popularisation of related tools, smartphones, tablets, radio and television, in short, the entire arsenal necessary for optimal use of ICTs. However, in this discussion, most of the respondents sacralised the processes of training or empowerment of pedagogues (Karsenti and Larose, 2001; Larose, Lenoir, Karsenti et al., 2002; Granger, Morbey, Lotherington et al., 2002; Karsenti, 2009; Karsenti, 2007), which they consider to be the only one capable of enabling them to emerge from the 'digital illiteracy' that leads them to consider themselves obsolete (Novoa, 1987). It is clear that the adoption of such a strategy becomes, in their view, the preferred way of ensuring that 'a micro-

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processor never becomes a micro-professor' (Francis Meynard, 1989). This assumption is in all respects congruent with the research of authors such as Pelgrum & Law, 2004 and Ben Abid-Zarrouk (2013) who extrapolate these devices on the double institutional and individual issues. The empowerment of teachers for a definitive exit from this 'digital illiteracy' finally constitutes the granite foundation of win-win relationships thanks to which pedagogues will not make ICT a suspicious challenger that undermines their status, but an ally thanks to which they will be able to perfect their teaching for maximum success of learners whatever the context. Such an attitude would dispel any confusion in the various uses of technologies in crisis situations, and even better, would popularise its daily uses among educators (Williams, Coles, Wilson et al., (2000). Fonkoua (2009 [36]) notes in this regard that "it is urgent to train trainers in the use of the multimedia system, in the development of courseware, the digitisation of course content and the scripting of pedagogical practices that must take into account the plurality of behaviours and situations on the cultural, economic and political levels". In fact, the pedagogical digitisation likely to boost learning here must be able to take into account the context for a creativity of a "subjective and contextual nature" (Romero et Lille, 2017, p. 32 [37]) capable of curbing the difficulties of the environment. This is a sure way to a "change of attitudes" and "pedagogical practices" (Karsenti, Savoie-Zajc et Larose, 2001 [38]) which is appropriate for a win-win "ticelogy" (Fonkoua, 2006a). As a result, the said change resulting from new pedagogical practices is not born ex-nihilo but rather is the result of "approaches that combine flexibility and experimentation to increase the capacity for change of individuals and organisations" (Autissier, Johnson & Moutot, 2015, p. 40 [39]). Thus, the many correlated obstacles decried by our respondents are likely to find an appropriate solution through 'a minimal level of technical and cognitive mastery of the artefact by the user. Then it presupposes a significant integration of the technical object in the user's daily life [...]. This mastery and integration must be sufficiently advanced to allow the user to carry out creative gestures with the help of the technical object on occasion" (Breton et Proulx, 2012, p. 284 [40]), which can adapt to contextual and situational difficulties.

VI. CONCLUSION

How should or can ICTs be conditioned for improved and continuous pedagogy in these spaces? The results of this research allow us to characterise the relationship between pedagogy and ICT in crisis situations as ambivalent, between manifest convergences and proven divergences in the implementation processes in our field of study. In fact, the digital divide (Valenduc & Vendramin, 2006) in these environments still occupies a sufficiently high percentage to annihilate many efforts to integrate ICT. While some institutions in some countries have been able to adapt brilliantly to sudden contextual and/or cyclical changes (Delavallée, 2016, p. 156 [41]), this is more the result of numerous forecasts, implications and timely agility on the part of employees (Peretti, 2019, p. 24 [42]; Sinapin, 2021, p. 3 [43]). Unfortunately, this is not the case in other environments, particularly in the PTA that is the subject of our study. It is certainly according to this logic that our data show an inability of ICT to implement a differentiated pedagogy that places at the centre of its apprehensions the contextual and/or conjunctural situation inherent to the crisis undergone. This inability stems as much from the context of severe impoverishment of the environment of our study as from unprepared policies or the inability to anticipate. Our research shows that only the establishment of timely and continuous training for the whole mass of pedagogues who are supposed to apply the lessons in a crisis situation could allow the establishment of real win-win relationships. The use of ICTs today, wherever they are used, must be 'thought out' (Proulx, 2005 [44]) in such a way as to be able to integrate educational systems independently of the contextual and situational difficulties associated with them (Guihot, 2010). The conditioning of a transition from dream to reality or rather from theory to practice as exposed by Reynolds, Treharne, & Tripp, (2003) would therefore constitute the primacy of any "quality of education in Africa" (Karsenti & Tchameni Ngamo, 2007 [45]), which is itself a sine qua non condition of any development (Loukou, 2012). Education, and hence techno-pedagogy, can be a life-saving tool for early childhood: "The key issue for this group are the desire and commitment to ensure quality education for some of the most vulnerable people in the world; and the frustration of being outside the mainstream humanitarian" (INEE working group, 2001[46]).

All in all, we must acknowledge that this research has enabled us to enrich our knowledge of the realities of PTAs in crisis situations, particularly the links and other realities between pedagogical activities and ICT. Clearly and peremptorily, our respondents were incisive on the fact that the use of ICT in pedagogy, although an asset of immeasurable gain, is nonetheless a luxury that is not within the reach of the first person to come along, especially not the teacher. These results are in line with the view of several researchers, such as Herr et Akkari (2006, p. 40 [47]), that "effective integration of ICT cannot be achieved without supporting training" in contexts that are sometimes harmful. The pedagogical activities of teachers in PTAs are difficult because of the deleterious context in which they work, as described in our introduction. The occurrence of crisis situations inherent in insecurity or health disasters such as COVID 19 accentuates these difficulties, especially since the means to curb them are slow in coming or very rarely sufficient. Many prerequisites are required in this context to maximise the implementation and impact of ICT for a more dynamic and performance-generating pedagogy. Teachers personally identify obstacles such as "digital illiteracy", which in itself is a major factor in the impossibility or difficulty of achieving win-win relationships. Consequently, there is a need for substantial training to enable teachers to take up the challenges of digital technology in a crisis situation in order to increase "enrolment rates, which have become the main indicator for measuring progress" (Petit et Comhaire, 20l0, p. 31 [48]). In addition to having achieved its objectives as predefined above, this research has also enabled us to identify the professional development needs of teachers in ZEP and to identify and push back the barriers

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between pedagogy and ICT (Maor, 2004). In short, ICT in any possible win-win relationship must logically be seen as "the Trojan horse of new pedagogies" (Karsenti, 2005, p. 6 [49]), which are themselves inspired by new contexts or situations.

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