



Representations and uses of digital technology in primary school teaching: A comparative study between two French overseas collectives in the South Pacific

Séverine Ferrière, Rodica Ailincăi

► To cite this version:

Séverine Ferrière, Rodica Ailincăi. Representations and uses of digital technology in primary school teaching: A comparative study between two French overseas collectives in the South Pacific. The International Education Journal: Comparative perspectives, 2022, 21 (1), pp.61-80. hal-04282760

HAL Id: hal-04282760

<https://hal.univ-reunion.fr/hal-04282760v1>

Submitted on 13 Nov 2023

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



Distributed under a Creative Commons Attribution - NoDerivatives 4.0 International License

Representations and uses of digital technology in primary school teaching: A comparative study between two French overseas collectives in the South Pacific

Séverine Ferrière

University of New Caledonia: severine.ferriere@unc.nc

Rodica Ailincăi

University of French Polynesia: rodica.ailincai@upf.pf

The aim of this descriptive, qualitative study was to collect the representations and feelings concerning the use of digital technology in the education of teachers and educational consultants in two French overseas territories, French Polynesia and New Caledonia. As this is an exploratory study, we did not formulate hypotheses, but rather sought information regarding expectations regarding differences and trends in perceptions and practices according to (1) the territory, (2) the status and (3) the gender of the individuals interviewed.

The results indicated that (1) social representations associated with digital technology are almost identical in the two territories, a similarity most likely linked to the influence of French educational directives on local policies regarding digital technology in schools; (2) the duties carried out by the interviewees seem to influence the representations and discourses: the teachers are concerned by the use of digital technology in the classroom, versus the educational consultants by training issues; (3) the discourse appears to be gendered: the men's discourse is centred on digital tools, the women's discourse is centred on the pupil and the contribution of digital technology (difficulties and advantages).

Keywords: comparative education; social representations; primary school teachers; digital technology

INTRODUCTION

Digital technology is a major issue in education. The main focus of educational policies on digital technology is to prepare pupils to be informed and critical enough to be able to navigate a digital society, but it is the teachers who are the agents through which pupils will develop their skills and knowledge (Huda et al., 2017; Van der Vlies, 2020; Vincent-Lancrin et al., 2019). Digital technology is an interdisciplinary and multidimensional field of investigation, which is as concerned with the actors (pupils, teachers, parents, educational policy makers) and tools (computer, internet, tablets, interactive whiteboards, digital workspace, etc.) as with the skills of the different actors with each of the available tools and interactions between teachers-students-technology.

As several researchers have pointed out (Almekhlafi & Almeqdadi, 2010; Amadiou & Tricot, 2014), technologies should be considered as supports for the development of new practices to facilitate learning. However, it would seem that the major obstacles to policy implementation are the diffusion of digital practices and their adoption in the professional field. These two aspects are curtailed by teachers' negative perceptions of digital technology in their more or less well-founded professional practice (Balanskat & Blamire, 2007; Carugati & Tomasetto, 2002; Harrison et al., 2002; Machin et al., 2006).

This article presents a comparative qualitative study between two former French Pacific Island colonies: French Polynesia and New Caledonia. Since 2004, French Polynesia has been an "Overseas Collectivity", benefitting from administrative but not political, autonomy. This means that certain domains are still under the aegis of the French State, while others are under the jurisdiction of Polynesia. New Caledonia has been included in the list of overseas collectivities since 2003 but has had political autonomy and a transfer of jurisdiction since 1998. Therefore, these two territories enjoy a certain autonomy in terms of educational policies while following the prerogatives and school curricula of France. Indeed, these two territories have kept the "baccalauréat", which is under the jurisdiction of the French State, as a formal qualification.

In this educational context, we wished to question the actors most involved in primary education, namely teachers and educational consultants,¹ to ascertain their social representations and practices regarding the use of digital technology in education. Such research recognises the many studies that find the behaviour of teachers is more influenced by their social representations of digital technology than by their own skills in technology use (Pajares, 1992; Prestridge, 2012). Considered as a more or less conscious mental phenomenon, social representations are transformed in the interaction with objects, contexts, subjects etc.

As this was an exploratory exercise, with the aim to give a voice to the actors and of gaining a deeper understanding of their positions, we did not attempt to form or find support for any hypotheses. We refer here to the "grounded theory" (Strauss & Corbin, 1998) associated with a qualitative and inductive research approach. The postulate is to collect information in the field with as few hypotheses as possible in order to overcome possible bias and collect empirical social experience as close as possible to reality (Glaser, 1978) via meanings, perceptions, emotions, attitudes and beliefs of the respondents (Ailincal & Gabillon, 2018; Charmaz & Belgrave, 2012). However, in the light of the scientific literature and the contextual variables, we expected to identify significant differences and distinguish key trends in perceptions and practices according to the territory, status and gender of the individuals we questioned. As trainers in initial and continuing training for teachers and educational consultants, the aim of this study is, thus, to understand and support practices in the field within the framework of initial and continuing teacher training from a discovery and innovation perspective.

¹ The educational consultant is a primary school teacher whose educational expertise in all areas of primary school education is recognized and validated by a certification. After obtaining such a certificate, such teachers are relieved of hours of teaching, becoming consultants whose mission in primary education is to advise in three ways: educational support for teachers and school teams; initial and continuing training of teachers; and the implementation of educational policy.

Political and territorial features of French Polynesia and New Caledonia and their impacts on education

As we have already noted, these two territories have several characteristics in common, not only geographically and culturally but also on an administrative and institutional level in terms of educational policy. They are both situated in the South Pacific, with Papeete and Noumea 15,714 km and 16,742 km from Paris respectively.² In terms of population, the two islands are roughly similar: 270,500 inhabitants for French Polynesia and 268,767 for New Caledonia. On an administrative level, they are both overseas collectivities, the first governed by Article 74 of the French Constitution, while the second has what is known as “special status” and is governed by Title XIII of the French Constitution (articles 76 and 77). Institutionally, the two collectivities, therefore, benefit from a fairly broad skill (power) set transferred within the framework of the general principles fixed by the Constitution.

Thus, the particularity of these two territories derives from the transfer of educational skills, which results in a number of responsibilities, notably concerning the adaptation of school curricula. However, as the higher secondary school qualification is delivered by the French State, France retains a *droit de regard*, or the right of inspection and, despite the contextual curricular changes to the educational systems, lessons are still closely modelled on the reforms and content of the French school curricula (Ailincal & Delcroix, 2018; Touitou et al., 2020).

In terms of school enrolment, a second common characteristic lies in the islands’ geographies and the distributions of populations, which are concentrated in the towns of Papeete and Noumea and their surrounding areas;³ this means that there is a low population density, as well as a remoteness in the archipelagos and in the northern and island provinces of New Caledonia (see Figures 1 and 2).

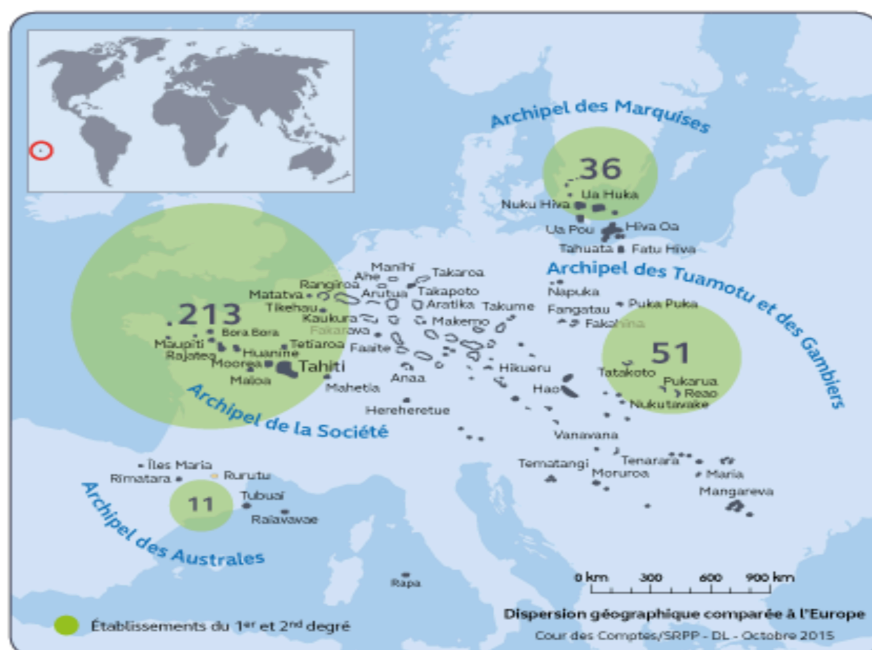


Figure 1: Distribution of pupils and classes in French Polynesia (Cour des comptes, 2016)

² Papeete is the capital of French Polynesia and Noumea the capital of New Caledonia.

³ Noumea has approximately 2,000 inhabitants/km² and Papeete 1,500 inhabitants/km².

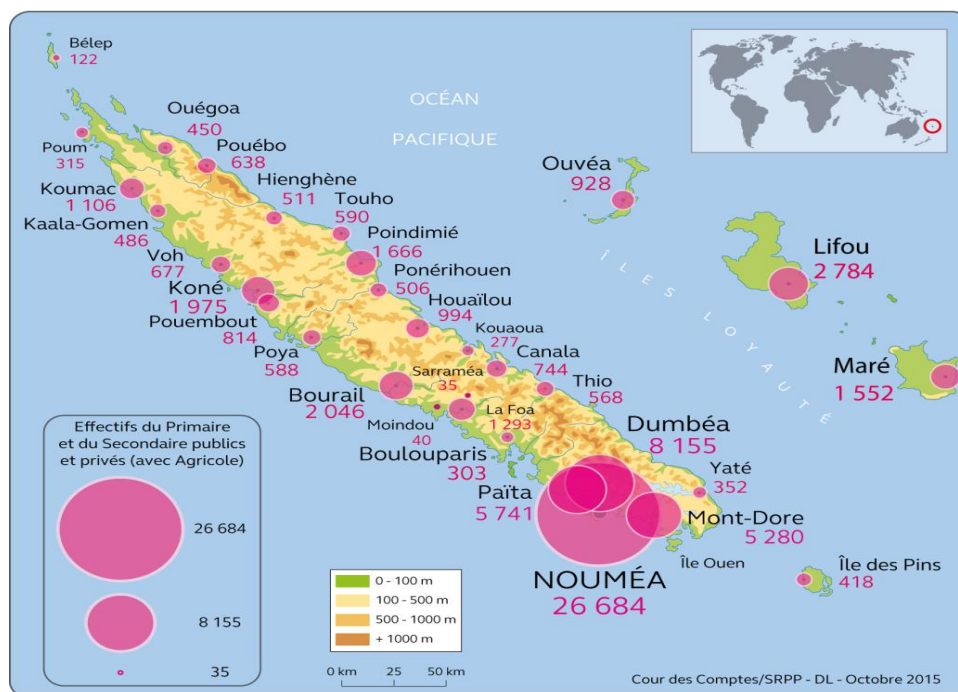


Figure 2: Distribution of pupils and classes in New Caledonia (Cour de comptes, 2016)

In French Polynesia, a third of primary schools record fewer than five classes per school. A significant number of schools also have only one multilevel class: 13% in French Polynesia and 10% in New Caledonia. The remoteness of these schools from the provincial capitals of these territories (Papeete and Noumea) is compounded by other particularities, such as the difficulties of providing ongoing teacher training; difficulties with providing class teaching materials, especially in terms of digital equipment; and the lack of information and project coordination. Regarding other variations, gathering of statistics regarding the ethnicities of members of the population has been prohibited in France since 1978. French Polynesia has adopted this law, which does not allow the collection of personal information according to community affiliation. In New Caledonia, statistics on membership of ethnic groups are authorised for population censuses but, since 1993, are not authorised for educational purposes.

One of the consequences of the demographic and the organisation of schools leads to serious inequalities in pupils' educational outcomes: 54% of pupils in French Polynesia and 55% in New Caledonia obtained their baccalauréat compared to 83% for those on the French mainland. This, despite an improvement in educational outcomes over the last few years (Cour de comptes, 2016) between pupils educated in Tahiti and those on other islands of French Polynesia, and of the schools of Noumea and its surroundings compared to the northern and island provinces. As we have underlined, direct measurements are not authorised. But, in New Caledonia, if one crosses the declared community memberships and the level of education, or by territories and results of the national evaluations, the inequalities between the Kanak (native people) and the non-Kanak appear in primary education (Hadj et al., 2012). Another measure relating to illiteracy and innumeracy among all adults shows that 18% of the population is

illiterate, and it is in the Province of Islands⁴ that this is most frequently the case (Information et Vie Quotidienne, 2013).

Even if their history and colonial past may differ (Salaün, 2013; Saura, 2015), French Polynesia and New Caledonia are characterised by considerable cultural and linguistic diversity. On a linguistic level, French is the official language and also the language of instruction. As the Court of Auditors (Cour des comptes, 2016) states:

Many regions have a low population density (e.g., provinces of the Islands and north in New Caledonia), some being sometimes very distant archipelagos (for example Tuamotu, Gambier, Austral and Marquises in French Polynesia). These less populated regions are also often poorer and feature a diversity which is marked by the use, in some parts of French Polynesia, of a local language, in addition to French. In French Polynesia, the number of speakers of one of the four main Polynesian languages (Tahitian, Paumotu, Mangareva and Marquesan) is around 167,000 (62% of the total population), slightly less than for French. In New Caledonia, over 70,000 people (26% of the total population) have been recorded as speaking one of the 28 Kanak languages.” (pp. 290–291)

There is no exact and systematic measure of the use of vernacular languages in the classroom.

Concerning digital technology in New Caledonia, according to the “Digital Barometer” (2011), the study made it possible to identify a typology of user profiles. Twenty two percent of the population is identified as being “deprived” due to a lack of equipment and means (income and networks). The profile is made up of people under 40 (average age is 29 years), in the northern province and the islands and Melanesian people. In French Polynesia, the “Digital Barometer” (DGEN, 2013) also points to a digital divide: 21% of households in the Windward Islands do not have internet and 17% do not have a computer. These percentages rise to 84% (no internet) and 40% (no computer) respectively in the remote archipelagos. In summary, these surveys reveal a geographic (in terms of networks and equipment), economic (with repercussions on equipment), cultural and generational (age, family practices) divide.

The various elements paint a contextual picture of these two island territories. Regarding digital technology in education, the two territories are impacted by these issues with regard to their educational policy. In French Polynesia, the country’s law *n°2017-15 of July 13, 2017*, relating to the education Charter aims to “train students to master digital tools and prepare future citizens to live in a society whose technological environment is constantly evolving” (p. 13), as well as to fight against the digital divide:

The digital divide, particularly significant in the archipelagos, must be reduced by drawing up a plan to equip establishments with equipment and digital resources and by putting in place a digital pedagogy (p. 13).

Concerning New Caledonia, the Caledonian educational project, by the *Application Charter of Deliberation n°106 of January 15, 2016*, relating to the future of the Caledonian school, is based on four axes. The fourth axis is to “open the Caledonian school to the Oceania region and to the world to meet the challenges of the 21st century” (p. 5), in particular by promoting the development of digital technology in

⁴ Province of Islands (Ouvéa, Lifou, Maré, see figure 2) is made up of 94% of Kanak people (ISEE, 2019).

schools. In addition, article 13 of this Charter states that “New Caledonia promotes the permanent adaptation of the School to meet the challenges imposed by globalization and technological developments” (p. 5).

The common factors (political and territorial features), in terms of difficulties and particularities regarding mainland France through the adaptation of educational policies, justify the use of a comparative approach. Generally, the development of a digital school passes, above all, through the observation and knowledge of teaching practices, themselves dependent on representations and skills, as prerequisites for appropriation.

Social representation and professional teaching practices regarding the educational use of digital tools

A number of studies show that, in the context of digital technology in education, the behaviour of teachers is influenced more by their own social representations than by their understanding of digital technology (Ertmer, 2005; Pajares, 1992; Prestridge, 2012).

The theory of social representations emerged in France during the 1960s at the initiative of Serge Moscovici (1961, 2008), one of the founders of European social psychology. The theory has gradually been accepted by an emerging interdisciplinary field (Jodelet, 2008, 2016) which transcends the frontiers of social psychology and is in dialogue with sociology, anthropology, communication and the media. There are many research projects and disciplines currently engaging with this approach, which is applied in the various fields of health, environmental protection, sciences, politics, economics and education (De Rosa et al., 2018; Jodelet, 2011; Rateau et al., 2012). The classic definition proposed by Jodelet (1989) enables us to take account of the heuristic dimensions of this approach. Social representations are “a form of socially formulated and shared knowledge, which has a practical application and contributes to the construction of a reality common to a social group” (Jodelet, 1989, p. 36). To complete this definition, we agree with the assertion of Abric (1994) that social representations produce practices and vice versa.

The decades of successive hopes and inconclusive experiments regarding educational digital technology led Cuban (1986) to qualify the entry of new technologies into schools as a “fickle romance” (p. 4). He identifies four recurrent phases: predictions of expected changes, promising pilot schemes, the emergence of problems when these schemes are put into practice, and then the decline in the use of these new technologies. These repeated experiments may explain some of the obstacles and resistance factors on the part of teachers regarding the use of digital technology in their professional practices. The latter emphasises more recently that these “cyclical patterns” are still relevant, as Cuban has been able to show with tablets and MOOCS in higher education, (for e.g., see Cuban & Jandric, 2015). Indeed, these interactional and cumulative obstacles and negative social representations may lead to a tendency to reject new technologies following repeated negative experiences (Cuban, 1986; Karsenti & Lira-Gonzales, 2011).

On the contrary, positive social representations lead teachers to develop professional practices which are rooted in digital technology (Archambault, 2011; Berney & Pochon, 2000; Chenu et al., 2003; Lillard, 1985; Loyd & Gressard, 1986; Rinaudo, 2002). Viewed in terms of change, Sauvé, Wright and Saint-Pierre (2004) identify four

categories of resistance to change, or obstacles: the teaching economy (too much work, lack of training), changes in teaching style (pedagogical constraints, risk of failure, pupils' reactions), the integration of Information and Communications Technology (ICT) into the organisation (insufficient technical support, inadequate equipment) and the integration of ICT into professional practices (inadequate access to technology, lack of training, resistance to technological change).

Consequently, the exchange of effective, experiential knowledge produces social representations concerning appropriation or resistance according to the proximity of the object. In other words, between the old and the new, an issue which Assude, Bessières, Combrouze and Loisy (2010) summarise in a dialectic of "changes/resistances". In the words of Sarrica (2010, referring to Farr and Moscovici, 1984), digital technology bears the characteristics which underlie and enable the development of social representations: it is a multi-faceted topic which leads to debate and controversy; it lies within a sociocultural and historical context; and the use of digital technology in everyday life leads to a discussion and interpretation of its uses. As a consequence, we need to understand the social representations associated with digital technology if we are to inform and support teachers' practices.

Aims

This study is guided by our opening question relating to the effect of territorial context when applied to teachers' and educational consultants' social representations of digital technology in primary education. Will we find important advantages and disadvantages in the studies on this subject, not only in social representational terms but also in professional practices? If so, what are they and how can one draw upon these social representations when considering how to support teachers?

METHODOLOGY

Surveyed population

The participants in this study comprise 31 teachers and consultants in primary education, all of whom have been in their posts for at least 10 years. The sample was selected in accordance with the theoretical sampling method in the light of Grounded Theory (Glaser, 1978; Glaser & Strauss, 1967) for half the corpus in order to collect social representations associated with digital technology, a particularly commonplace subject among the teaching profession and in society as a whole. The use of the inductive method is a means of developing theories in a "grounded approach" (Corbin & Strauss, 1990). This type of approach leads to building a sample that is based on the principle of similarity by selecting subjects that are representative of the phenomenon to be observed. The objective is to achieve saturation, that is to say that the data collected is no longer new, while maximising the variation (age, sex, status etc.) (Ailincal & Gabillon, 2018). As a first step, the Tahitian corpus enabled us to hold 16 semi-directed interviews using this methodological approach (Ailincal et al, 2018). The next stage was to carry out a similar study in New Caledonia. We were thus able to collect a sample which reflected the regional territorial variations: French Polynesia (N=16) versus New Caledonia (N=15); professional activity: teachers (N=16) versus educational consultants (N=15); and gender: male (N=15) versus female (N=16).

With the aim of discovering the social representations of teachers associated with digital technology in their professional and cultural context (Pajares, 1992), we chose to hold semi-directed interviews, a method of data collection prescribed within the context of inductive research, as well as in the gathering of social representations thanks to their discursive dimension (Abric, 1994). This type of interview enables the collection of qualitative information by asking open questions on a series of predetermined themes. In our case, six themes linked to digital technology in education guided and fuelled the interviews related to actual practices (1), their representations and beliefs (2, 3, 4 and 6) and their level of expertise:

1. participants' last usage of digital technology
2. participants' views of the practices and use of digital technology in a school context
3. possible influence of the use of digital technology on participants' interactions
4. participants' appreciation of the use of digital technology
5. participation in training in the use of digital technology by participants
6. participants' perceived necessity for skills in digital technologies⁵

In each case, a sole researcher took responsibility for the interviews, so as to limit the variations linked to the investigator. They then adapted their interventions according to the interviewees' discourse. For example, if the person broached a theme outside of the six defined to guide the exchange, we would engage with them to develop their thinking in accordance with "grounded theory", which aims to bring out themes. Contextually, in French Polynesia, the interviews were held at the university (for most of the teachers and consultants) or outside in a friendly setting (for only four teachers); in New Caledonia, four interviews were held at the university and the rest at the teachers' and educational consultants' workplaces (classroom, break room or office). The average duration of an interview was 54 minutes (the shortest was 35 minutes and the longest 71 minutes). The interviews, conducted in French,⁶ ended once the six themes had been covered and the interviewees did not bring up new information or think they could contribute any more. In addition, for material reasons (travel to more isolated places and time), this exploratory study involves a limited number of teachers, themselves only drawn from the urban areas of French Polynesia (the island of Tahiti) and New Caledonia (Noumea).

Data analysis tools

Following the semi-directed interviews held by means of the set of questions previously presented, we performed a discourse analysis through lexicometrics using the ALCESTE method, developed by Reinert (2007). As a result, the corpus was sliced iteratively and according to the variables denoted by the researcher. In the case of our

⁵ The questions were: When did you last use digital technology? What do you think of your practices regarding the use of digital technology in class? Do you think that the use of digital technology could influence classroom practices/interactions? If yes, how? Do you like using digital technology in your practices? Did you take part in an in-service training program/event about digital technology? (If yes) How did you feel about it? (What do you think about it?) Do you think that the acquisition of digital skills is necessary (for teachers and students)? The aim was to initiate reflection without induction, in order to gather their own representations.

⁶ The official language and of schooling in French Polynesia and New Caledonia is French, the interviews were therefore entirely carried out in French.

research, the stated variables are territory (French Polynesia versus New Caledonia), the status (teacher versus educational consultant) and gender (women versus men). This slicing allowed us to identify the distribution of vocabulary, highlighting similarities and contrasts, through an Ascending Hierarchical Classification (AHC).⁷ This classification logic through similarities and dissimilarities can be compared to a map of the “common assumptions” in a discourse, which the software calls “classes” (Reinert, 1999). This global approach to the corpus makes it possible to identify statistically independent classes (or clusters) of words by iteration. The AHC facilitates a general exploratory approach to the corpus by bringing to light the differentiated positions taken by the subjects because the analysis is carried out according to the active variables (in this case territory, profession and gender). Once the speech mapping is stabilised, the researcher makes inferences and interprets the data, as in any qualitative approach, according to the particularities of the areas identified through similarities and dissimilarities. The advantages of this approach are that it allows the researcher to identify trends and enables them to capture the common representations as well as the divergences above and beyond the “linear” discourse which may be produced in an interview.

It is also an appropriate method in the context of social representations because it allows us to highlight the knowledge formulated and shared socially in order to go beyond only individual perspectives

RESULTS

The textual analysis carried out with the aid of the free Iramuteq software⁸ highlights three sites of traditional, stable speech (called a “class”), characterised by the stated variables. Table 1 illustrates the relationships between the “classes” or sites of discourse. The corpus was first divided into two subgroups, with “class 3” in opposition to the rest of the corpus, meaning that it differs considerably in terms of occurrences and co-occurrences. Then the sub-group opposite “class 3” was divided into two other classes. Each of these classes is characterised by the categories of variable associated with them and which, thus, constitute the profile of each class.

Results of the software analysis showed that the territories themselves had no effect on the discourse; in other words, whether the subject was a teacher or educational consultant in French Polynesia or in New Caledonia, it had no effect on digital practices and representations. However, depending on whether the subject was a teacher or an educational consultant, it modified the discourse, which is logical as they do not have the same professional functions. Moreover, depending on whether the subject was male or female, it also modified the discourse, which corroborates the research on digital

⁷ More precisely, the AHC are iterative analyses and are based on a division of the corpus according to “context units”. We distinguish the initial context units which are the indicated variables (territory, status and gender), from elementary context units, which are the discourse fragments to which the research for co-occurrences relates. The fact that the analysis is iterative means that each step of the processing leads to separating the whole corpus into two halves, each presenting a coherence in terms of lexical co-occurrences (the latter being supposed to refer to the same field of use, to close points of view). The AHCs are formed according to the distance of the “signed association χ^2 ”.

⁸ <http://iramuteq.org>

technology and gender stereotypes (Cohoon & Aspray, 2008; Ferrière et al., 2013; Ferrière & Collet, 2016).

Table 1: Three lexical classes identified (with lexemes classed according to the chi2 test of association with the class and the significant variables)

Variables	Teachers		Educational consultants
	Female	Male	
% of the discourse	Class 1: 43.8	Class 2: 25.9	Class 3: 30.4
Theme	Added-value pupils	Applications and tools used in class group	Formative and organisational dimensions
	child	example	training
	question	text	school
	pupil	[to] write	year
	tool	video	advisor
	response	exercise	educational
	find	internet	path
	put	reading	era
	interaction	image	[to] train
	give	history	colleague
	error	research	district
	see	group	cycle
	task	photo	teaching
	master	lesson	last
	moment	work	equip
	respond	film	information technology
	wish	type	post
	bring	document	room
	feel	[to] work	initial
	difficulty	[to] film	director
	go	visual	inspector
	side	treatment	provide
	give (back)	documentary	equipment
	really	book	first
	help	oral	teacher
	attention	application	town hall
	lose	show/expose	[to] support
	motivation	[to] project	island

Formative and organisational dimensions

Class 3 represents 30.4% of the discourse analysed and this was mainly produced by the educational consultants. The associated forms allow us to distinguish the associations,

which can be summarised according to their role and the *training* conditions⁹ (*advise, teaching, train, support*), as well as a description of the training conditions via the institutional *context* (*school, district, cycle, director, inspector, town hall, island*) and the temporality (*year, career, period*). It is also a question of the equipment (*equip, information technology, post, room, provide, equipment*)

The most significant discourses¹⁰ allow us to explain the relationships between the discourses:

Well, the first thing I have to do in my work is to begin with a school project, with the director, we discuss their needs in terms of teacher training. (male educational consultant in French Polynesia)

For me, this is how I work, it all begins with the school project because if my colleagues are having difficulties, we start by speaking with the director about the school's needs in terms of training. (male educational consultant in New Caledonia)

Digital technology is mainly considered by education consultants in connection with projects within the schools, while considering their hierarchy, so as to be able to provide support; this is often in the form of training, which should respond as closely as possible to local needs. Digital technology is thus associated with the formative dimension and its deployment on the ground, which confirms the importance of “on the job” training and, more broadly, the issue of training on request.

Application and tools used in the class

Class 1, which represents 25.9% of the discourse, is mostly produced by male teachers from all the territories in question. This class highlights the dimension of the *examples* and the class situations and sheds light on the main usages connected to written and spoken language (*text, write, reading, history, oral*), via specific tools (*video, internet, photo, film, type, [to] film, [to] project*). We also identify a semantic field which is more relevant to the teaching dimensions permitted by digital technology (*research, group, work, [to] show*).

[So], when we do research on the internet, or example, we worked on—er—on endangered animals—er—so we needed to look for information on the animals. (male teacher, New Caledonia)

[O]f group work, for example, and that's how you have to do it. I show you my slides you listen, right—you listen—for me it doesn't work like that anymore. (male teacher in French Polynesia)

That's a great help for me—working in pairs for example. Yes that gives me an opportunity to have interesting interactions, for example, for a dictation when there's someone else there to dictate a text and then his friend who starts to type the text. (male teacher in French Polynesia)

It's more rewarding than writing on a flipchart and sticking up pictures you've photocopied or drawn—er—you take—you take the work—you put it on a USB drive. (male teacher in New Caledonia)

⁹ The significant lexemes are in italics.

¹⁰ The software lists the most significant words in the AHC, as well as the most significant (or representative) text segments. It is these corpus snippets that we use to illustrate.

The discourses have a somewhat practical bias and are produced by teachers who seem to have mastered the tools well enough to consider the links between the pedagogical aspects within the learning processes in new ways. This technical attitude is seen more often in men who, even if they do not have advanced skills, consider themselves to be more competent (Ferrière & Collet, 2016).

Added value for the pupils

Class 2, the most intense of the discourses (43.8%), is focused on the pupils, with women being the significant variable. The most significant lexeme is *child*, followed by *question* and *pupil*. The discourses are directed more towards a questioning of the positive and/or negative points in the use of digital technology. The discourse concerns not so much the technique as the pupil's experience (*response, find, put, error*, but also *feel, difficulty, help, attention, lose, motivation*). As the following significant extracts illustrate, the use and advantages of digital technology are more nuanced:

And so, the children had to respond to the questions above and when we looked at them, we realised that we needed to take note of the information we found there and that we shouldn't just take them at face value. (female teacher in French Polynesia)

To a pupil who's going to stumble on one, well, he's going to find some information in the—I ask him to answer a set of questions—he's going to find it difficult to read the answer on the screen—the answer—to find the answer. (female teacher in French Polynesia)

The children need to like it. It's something I've asked myself to be sure, but what are they going to learn. (female teacher in French Polynesia)

Even if they use the overhead projector, but anyway—er—I've wondered about being in front of a screen all day, all year round—yeah—I have small children—er—who are little. (female teacher New Caledonia)

But you have to stay alert and you need to have a smart practice, right. Ask yourself whether you know, at any given moment, whether it's the digital technology which is a plus. (female teacher New Caledonia)

The discourses which are more mixed and seen in the context of effective learning using digital tools are more concerned with the pupils than the mastering of the tools. The slower and more measured appropriation of digital technology by women has already been observed elsewhere (Jouët, 2003), and this impacts their self-representations in terms of skills, even though they may be expert users. These reservations are most often expressed in our research in connection with overexposure to screens and thus more generally the role of the school in the digital context.

DISCUSSION

This exploratory study on social representations associated with digital technology among teachers and educational consultants in primary education in two territories confirms the results of other studies on the advantages and limitations of digital technology. Firstly, while we might have expected the context of the territory to have an effect, in that both territories share characteristics in terms of geography, equipment, and particularly in educational policies, we did not observe differences in the

discourses. In theory, the historic context and sociocultural antecedents should be significant (Sarrica, 2010), and this is interesting because one might also imagine that the directives in terms of the use of digital technology are almost identical. Indeed, as we have already observed, even if these two territories benefit from a relative autonomy in the choice of teaching materials compared to mainland France (adaptation of teaching), this is not supported in the details of the teachers' and educational consultants' discourses. However, if one examines this in more detail through a close content analysis, it becomes clear that there are contingent uses and projects which would benefit from being developed. In an island context characterised by isolation and remoteness, particularly when considered in the context of their personal representations (such as using new technologies to stay in contact with their children who are studying in France), there are some interesting examples. For example, using digital technology to allow the class to visit virtual museums, get to know their own island and discover the world beyond it. Another example presented by an educational advisor in New Caledonia describes the importance of being able to store, conserve and disseminate local knowledge, notably through the recording of vernacular languages in danger of being lost.

The variation effects in the discourses are associated with the employment status and gender of the interviewees. The differences between the discourses of educational consultants and teachers are quite logical. The educational consultants' involvement in classes is intended to analyse the teaching situations and, as a result, to offer support as required, either by the teachers or, in the case of school projects, by the leadership teams. In this sense, the question of training for educational consultants is central, especially when it comes to on-site support. On-site training is not only a necessity but also a means of supporting new and innovative practices, as mentioned by Assude et al. (2010) in the context of material preoccupations. In addition to the discourses produced by advisors, we observe that the discourses associated with teachers, and in particular the male teachers, are in line with the somewhat technical practices in class. This implies that further thought should be given to those approaches which may seem superficial, even if one observes a semantic field in the discourse linked with the possible interactive aspects, and which thus invites a more pedagogical reflection.

Our findings indicate that the social representations associated with digital technology in education differentiate along gender lines. In summary, the discourses of the participants in this research focus either on "action" or "observation", an antinomy which reflects ingrained gendered social representations. This male/female difference operates not only in terms of social representations but also in terms of attitudes to integration. Our analysis suggests that the added value of the digital tool to teaching was seen by men as technical, at the risk of being rather superficial, while the women remained more restrained and pupil centred. The fact that we find male-female variations in the discourses and practices may bolster and legitimise the social representations associating digital tools/information technology/technique/sciences with the masculine world. The links between national stereotypes vis-à-vis science and the place of women in these disciplines are still significant, as, for example, the international study by Miller, Eagly and Linn (2015) in 66 countries was able to highlight. In other words, adults still associate science with the masculine world (Smyth & Nosek, 2015).

CONCLUSION

In the context of policies favouring a digital school in two French overseas territories, French Polynesia and New Caledonia, this study has interrogated the social representations and feelings of teachers concerning the use and integration of ICT in their everyday practices. Essentially, the successful implementation of these policies relies on the actors' perception of the digital tools and of their impact on their own professional practice (Assude et al., 2010; Carugati & Tomasetto, 2002; Ertmer, 2005; Pajares, 1992; Prestridge, 2012).

This exploratory study involves a limited number of teachers, themselves only drawn from the urban areas, and, as such, its internal validity is yet to be confirmed and its results should be interpreted with caution. Nevertheless, some compelling ideas have emerged. Firstly, the social representations and discourses are almost identical in the two territories, a resemblance most likely related to the influence of the French educational directives on the local policies on "digital technology in schools". Secondly, the social representations and discourses appear to be affected by the functions performed by the interviewees (schoolteachers versus educational consultants). The educational consultants afford more importance to the issue of training while the schoolteachers are committed to using digital technology in class. Furthermore, their expectations seem to diverge on certain training points, particularly for the schoolteachers, with a misalignment between the training content and the tools available to them, and between the training and its practical application. For the educational consultants, the main difficulties are the application of the training and the motivation of the participants. Thirdly, the discourse appears to be gendered, with the male teachers presenting a discourse focused on pedagogical action with digital tools, while the female teachers are more concerned with the experiences of the pupils and the contribution made by digital technology (difficulties and advantages).

We consider that these issues should be the subject of a deeper study, extended into regions without internet, or in which internet access is intermittent and/or the relationship with digital technology is limited to the use of equipment (video projector, recording device, camera, computer) and educational software preinstalled on the devices (computers, tablets). A survey of representations as genesis and construction which will have a later impact on behaviours and usages could be beneficial in the design of initial training programmes and continuing professional development on the theme of digital technology in French overseas departments and territories, and beyond.

Although the aim of these interviews was not to examine the contextualised practices, the fact that these specific points emerged from the discourses has led us to think more deeply about this. This is now even truer than before, as the unprecedented global situation provoked by Covid-19 has, in no uncertain terms, highlighted social and digital inequalities, as much for the pupils as for the teachers, in terms of equipment and digital practices during periods of lockdown.

REFERENCES

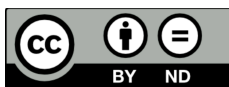
- Abrie, J.-C. (1994). *Pratiques sociales et représentations*. [Social practices and representations]. Presses Universitaires de France.
- Ailincal, R. & Delcroix, A. (2019). Contextes et transmissions: les apports de la recherche en éducation. Les exemples de la Polynésie française, de la Nouvelle-Calédonie et de l'Océanie. [Contexts and transmissions: the contributions of research in education. The examples of French Polynesia, New Caledonia and Oceania] *Contextes et Didactiques*, 14, <https://doi.org/10.4000/ced.1271>
- Ailincal, R. & Gabillon, Z. (2018). Analysing teachers' representations of Digital technology using a grounded theory approach. *Eurasia Journal of Mathematics, Science and Technology Education*, 14(10), 1–18. <https://doi.org/10.29333/ejmste/93380>
- Ailincal, R., Gabillon, Z., & Ferrière, S. (2018). Des éléments de corpus pour comprendre les représentations sur le numérique en contexte polynésien: préalables à la conception d'un dispositif de formation des enseignants du 1er degré. [Corpus elements to understand digital representations in a Polynesian context: prerequisites for the design of a training system for primary school teachers]. *Contextes et didactiques*, 11, 35–68. <https://doi.org/10.4000/ced.1003>
- Almekhlafi, A. G. & Almekdadi, F. A. (2010). Teachers' perceptions of technology integration in the United Arab Emirates school classrooms. *Educational Technology & Society*, 13(1), 165–175.
- Amadiou, F. & Tricot, A. (2014). *Apprendre avec le numérique. Mythes et réalités*. [Learning with digital. Myths and facts] Retz.
- Archambault, J.-P. (2011). Le mythe de l'inutilité d'une discipline informatique dans l'enseignement général. In Peliks, G. (Ed.), *Mythes et légendes des TIC* [ICT myths and legends]. Forum ATENA.
- Assude, T., Bessi res, D., Combrouze, D., & Loisy, C. (2010). Conditions des g n ses d'usage des technologies num riques dans l' ducation, [Conditions of the genesis of the use of digital technologies in education], *STICEF*, 17. <https://doi.org/10.3406/stice.2010.1003>.
- Balanskat, A. & Blamire, R. (2007). *ICT in schools: Trends, innovations and issues in 2006–2007*. European Schoolnet.
- Barom tre Num rique (2013). *Les usages du num rique en Polyn sie fran aise, familles* [Digital uses in French Polynesia, families]. Rapport d' tude. DGEN, en ligne: <https://www.service-public.pf/dgen/wp-content/uploads/sites/3/2016/09/Les-USAGES-DU-NUMERIQUE-EN-PF-familles.pdf>
- Barom tre digital, DGEN (2013). *Les usages du num rique en Polyn sie fran aise*. <https://fr.slideshare.net/adneric/dgen-usages-numerique-en-pf>

- Berney, J. & Pochon, L.-O. (2000). *L'internet à l'école: analyse du discours à travers la presse*. [The Internet at school: analysis of the discourse through the press]. IRDP.
- Carugati, F. & Tomasetto, C. (2002). Le corps enseignant face aux technologies de l'information et de la communication: un défi incontournable. [Teaching staff faced with information and communication technologies: An unavoidable challenge]. *Revue des sciences de l'éducation*, 28(2), 305–324. <https://doi.org/10.7202/007356ar>
- Charmaz, K., & Belgrave, L. L. (2012). Qualitative interviewing and grounded theory analysis. In *The SAGE Handbook of Interview Research: The Complexity of the Craft* (pp. 34–366). SAGE Publications. <https://doi.org/10.4135/9781452218403.n25>
- Chenu, F. Mattar, C., & Mélotte, C. (2003). Comment ont évolué les représentations des publics demandeurs d'une formation professionnelle en informatique au cours des 15 dernières années? [How have the representations of people seeking professional training in computer science evolved over the past 15 years]. *Actes en ligne des 1ères journées DIDAPRO*. <http://edutice.archives-ouvertes.fr/docs/00/14/45/93/HTML/>
- Cohoon, J. & Aspray, W. (2008). *Women and information technology: Research on under-representation*. MIT Press.
- Cour des comptes (2016). *Rapport public annuel*. [Annual public report]. <https://www.ccomptes.fr/sites/default/files/EzPublish/09-systeme-scolaire-Polynesie-Nlle-Caledonie-RPA2016-Tome-1.pdf>
- Corbin, J. M., & Strauss, A. (1990). Grounded theory research: Procedures, canons, and evaluative criteria. *Qualitative sociology*, 13(1), 3–21. <https://doi.org/10.1007/BF00988593>
- Cuban, L. (1986). *Teachers and machines: The classroom use of technology since 1920*. Teachers college press.
- Cuban, L. & Jandric, P. (2015). The dubious promise of educational technologies: Historical patterns and future challenges. *E-learning and Digital Media*, 12(3–4), 425–439. <https://doi.org/10.1177/2042753015579978>
- Délibération Congrès de la Nouvelle-Calédonie (2016). *Délibération n°106 du 15 janvier 2016 relative à l'avenir de l'école calédonienne*. https://www.ac-noumea.nc/IMG/pdf/de_libe_ration_no106_du_15.01.16_relative_a_l_avenir_de_l_e_cole_cale_donienne.pdf
- De Rosa, A., Bocci, E., & Dryjanska, L. (2018). The generativity and attractiveness of social representations theory from multiple paradigmatic approaches in various thematic domains: An empirical meta-theoretical analysis on big-data sources from specialised repository “SoReCom ‘A.S. de Rosa’ @-library”. *Papers on Social Representations*, 27(1), 6.1–6.35.

- Ertmer, P. A. (2005). Teacher pedagogical beliefs: The final frontier in our quest for technology integration? *Educational Technology Research and Development*, 53(4), 25–39. <https://doi.org/10.1007/bf02504683>
- Ferrière, S. & Collet, I. (2016). *Tablettes tactiles à l'école primaire en France : Illusions essentialistes et pratiques genrées chez les enseignant.e.s du primaire*. [Touchscreen tablets in primary school in France: essentialist illusions and gendered practices among primary school teachers]. *Revue de Recherches en Littérature Médiatique Multimodale*, 4, 1–31. <https://doi.org/10.7202/1046998ar>
- Ferrière, S., Cottier, P., Lacroix, F., Lainé, A. & Pulido, L. (2013). *Dissémination de tablettes tactiles en primaire et réception des enseignant.e.s: entre rejet et adoption*. [Dissemination of touch tablets in primary school and reception of teachers: between rejection and adoption]. *Sticef*, 20, [En ligne]. <https://doi.org/10.3406/stice.2013.1063>.
- Glaser, B. G. (1978). *Theoretical sensitivity*. Sociology Press.
- Glaser, B. G. & Strauss, A. L. (1967). *The discovery of grounded theory*. Aldine Publishing.
- Hadj, L., Lagadec, G., Lavigne, G., & Ris, C. (2012). Vingt ans de politiques de rééquilibrage en Nouvelle-Calédonie: Démocratisation de l'école mais persistance des inégalités ethniques. [Twenty years of rebalancing policies in New Caledonia : Democratization of school but persistence of ethnic inequalities]. *Formation emploi*, 120, 101–125.
- Harrison, C., Comber, C., Fisher, T., Haw, K., Lewin, C., Linzer, E., McFarlane, A., Mavers, D., Scrimshaw, P., Somekh, B., & Watling, R. (2002). *ImpaCT2: The impact of information and communication technologies on pupil learning and attainment*. British Educational Communications and Technology Agency.
- Huda, M., Jasmi, K. A., Hehsan, A., Mustari, M. I., Shahrill, M., Basiron, B., & Gassama, S. K. (2017). Empowering children with adaptive technology skills: Careful engagement in the digital information age. *International Electronic Journal of Elementary Education*, 9(3), 693–708.
- ISEE (2013). *Information et Vie. Quotidienne*. https://fiaflab.nc/sites/default/files/images/ivq_-collegialite_28nov2013_0.pdf
- ISEE (2019). *Recensement*. <https://www.isee.nc/population/recensement>
- Jodelet, D. (1989). Représentations sociales: un domaine en expansion. In D. Jodelet (Ed.), *Les représentations sociales* [Social Representations] (pp. 31–62). Presses Universitaires de France.
- Jodelet, D. (2008). Social representations : The beautiful invention. *Journal of The Theory of Social Behaviour*, 38(4), 411–430. <https://doi.org/10.1111/j.1468-5914.2008.00383.x>
- Jodelet, D. (2011). Foreword. In M. Chaib, B. Danermark & S. Selander (Eds.), *Education, professionalization and social representations. On the transformation of social knowledge*. (pp. XVI–XXII). Routledge.

- Jodelet, D. (2016). La représentation: notion transversale, outil de la transdisciplinarité. [Representation: transversal notion, tool of transdisciplinarity]. *Cadernos de Pesquisa*, 46(162), 1258–1271. <https://doi.org/10.1590/198053143845>
- Journal Officiel (2017). *Loi du Pays Journal Officiel de la Polynésie n°2017-15 du 13 juillet 2017, Charte de l'éducation de la Polynésie française*, 1-43 <http://lexpol.cloud.pf/document.php?document=325995&deb=3811&fin=3853&titre=TG9pIGR1IFBheXMgbsKwIDIwMTctMTUgZHUgMTMvMDcvMjAxNw>
- Jouët, J. (2003). Technologie de communication et genre: des relations en construction, [Communication technology and gender: relationships under construction]. *Réseaux*, 120(21), 53–86. <https://doi.org/10.3917/res.120.0053>.
- Karsenti, T. & Lira Gonzales, M. L. (2011). La importancia de la motivación y las habilidades computacionales de los futuros profesores en el uso de las TIC. [The importance of the motivation and computing skills of future teachers in the use of ICT]. *Revista Iberoamericana de Educación Superior*, 2(3), 116–129.
- Lillard, D. (1985). A survey of Warren County teachers concerning the instructional use of microcomputers. Paper presented at the *Annual Computers in Education in Maryland Conference*, Baltimore, MD, June 21, 1985 (ERIC ED264224).
- Loyd, B. H. & Gressard, C. P. (1986). Gender and amount of computer experience of teachers in staff development programs: Effects on computer attitudes and perceptions of the usefulness of computers. *AEDS Journal*, 302–311. <https://doi.org/10.1080/00011037.1986.11008444>
- Machin, S., McNally, S., & Silva, O. (2006). *New technologies in schools: Is there a pay off?* Institute for the Study of Labour.
- Miller, D. I., Eagly, A. H., & Linn, M. C. (2015). Women's representation in science predicts national gender science stereotypes: Evidence from 66 nations. *Journal of Educational Psychology*, 107(3), 631–644. <https://doi.org/10.1037/edu0000005>
- Moscovici, S. (1961/2008). *Psychoanalysis, its image and its public*. Polity Press.
- Pajares, M. F. (1992). Teachers' beliefs and educational research: Cleaning up a messy construct. *Review of educational research*, 62 (3), 307–332. <https://doi.org/10.3102/00346543062003307>
- Prestridge, S. (2012). The beliefs behind the teacher that influences their ICT practices. *Computers & education*, 58(1), 449–458. <https://doi.org/10.1016/j.compedu.2011.08.028>
- Rateau, P., Moliner, P., Guimelli, C., & Abric, J.-C. (2012). Social representation theory. In P. Van Lange, A. W. Kruglanski, & E. T. Higgins (Eds.). *Handbook of Theories of social psychology* (Vol. 2, p. 477–497). <http://dx.doi.org/10.4135/9781446249222.n50>
- Reinert, M. (2007). Postures énonciatives et mondes lexicaux stabilisés en analyse statistique de discours. [Enunciative postures and stabilized lexical worlds in statistical discourse analysis]. *Langage et Société*, 121–122(3–4), 189–202. doi.org/10.3917/lis.121.0189

- Reinert, M. (1999). Quelques interrogations à propos de l'« objet » d'une analyse de discours de type statistique et de la réponse « Alceste ». [Some questions about the «object» of a statistical discourse analysis and the reponse «alceste»]. *Langage et Société*, 90, 57-70. <https://doi.org/10.3406/lsoc.1999.2897>
- Rinaudo, J. -L. (2002). *Des souris et des maîtres. Rapport à l'informatique des enseignants*. [Of mice and masters. Report to teachers' informatics]. L'Harmattan.
- Salaün, M. (2013). *Décoloniser l'école? Hawaï'i, Nouvelle-Calédonie. Expériences contemporaines*. [Decolonize the school? Hawaï'i, New Caledonia. Contemporary experiences]. Presses universitaires de Rennes.
- Sarrica, M. (2010). ICTs meanings and practices Contributions from the social representation approach. *The Journal of Community Informatics*, 6(3).
- Saura, B. (2015). *Histoire et mémoire des temps coloniaux en Polynésie française*. [History and memory of colonial times in French Polynesia]. Au Vent des Îles.
- Sauvé, L., Wright, A. & Saint-Pierre, C. (2004). Formation des formateurs en ligne: obstacles, rôles et compétences. [Onlie training of trainers: Barriers, roles and skills]. *La Revue internationale des technologies en pédagogie universitaire* 1(2). <https://doi.org/10.18162/ritpu.2004.45>
- Smyth, F. L., & Nosek, B. A. (2015). On the gender–science stereotypes held by scientists: Explicit accord with gender ratios, implicit accord with scientific identity. *Frontiers in Psychology*, 6, 415. <https://doi.org/10.3389/fpsyg.2015.00415>
- Strauss, A. & Corbin, J. (1998). *Basics of qualitative research: Techniques and procedures for developing grounded theory*. Sage Publications.
- Toutiou, A., Lefort, I. & Ferrière, S. (2020). Ouvrir l'École sur son espace proche : enjeux de la territorialisation de l'enseignement de la géographie dans le secondaire en Nouvelle-Calédonie. [Opening the school to its immediate area: challenges of the territorialization of geography teaching in secondary schools in New Caledonia]. *Géocarrefour*, 94(2), <https://doi.org/10.4000/geocarrefour.14207>
- Van der Vlies, R. (2020). *Digital strategies in education across OECD countries: Exploring education policies on digital technologies*. OECD Publishing. <https://doi.org/10.1787/33dd4c26-en>
- Vincent-Lancrin, S., Gonzalez-Sancho, C., Bouckaert, M., de Luca, F., Fernandez-Baerrerra, M., Jacotin, G, Urgel, J., & Vidal, Q. (2019). *Fostering students' creativity and critical thinking: What it means in school, educational research and innovation*. OECD Publishing. <https://dx.doi.org/10.1787/62212c37-en>.



This work is licensed under the Creative Commons Attribution-NoDerivatives 4.0 International License. To view a copy of this license, visit <http://creativecommons.org/licenses/by-nd/4.0/> or send a letter to Creative Commons, PO Box 1866, Mountain View, CA 94042, USA

Authors and readers are free to copy, display and distribute this article with no changes, as long as the work is attributed to the author(s) and the International Education Journal: Comparative Perspectives (IEJ: CP), and the same license applies. More details of this Creative Commons license are available at <https://creativecommons.org/licenses/by-nd/4.0/>. The IEJ: CP is published by the Oceania Comparative and International Education Society (formerly ANZCIES) and Sydney Open Access Journals at the University of Sydney. Articles are indexed in ERIC, Scimago Journal (SJR)Ranking / SCOPUS. The IEJ:CP is a member of the Free Journal Network: <https://freejournals.org/>

Join the IEJ: CP and OCIES Facebook community at Oceania Comparative and International Education Society, and Twitter: @OceaniaCIES