CÉGEP DE LA POCATIÈRE

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O2 - DIGITAL POLICIES

IN THE QUEBEC EDUCATION SYSTEM

Institutional Management and Pedagogical Innovation and Governance

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Romania - University of Craiova

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Recognized for its quality, excellence, and sense of innovation, the CEGEP in eastern Quebec (La Pocatière), is a partner in the project thanks to its high added value in including digital technology and governance.

The ANGE project was launched on September 1, 2017, and will end on August 31, 2020. It has two priorities:

1. Promote education systems which are more open, innovative, and well set in the era of digital technologies
2. Reinforce the profiles of teaching professions through training and development of the professional skills of all stakeholders (school heads, teachers).

The aim of this project is to respond to the encouragement to create networks and communities of practice focused on learning in order to pave the way for innovation at the European level. The project builds on the digital skills of each country and institution participating in the project to create a team of competent European digital trainers and provide coaching between European institutions.

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INTRODUCTION

In recent decades, in the changing digital age, social and economic changes have altered the way we conceptualize teaching and learning and have created new needs. The necessity to develop new and effective teaching and learning practices in our institutions from early childhood to higher education has gradually emerged.

This Fourth Industrial Revolution has not only changed our vision of educational practices but also our mode of governance. In order to facilitate the exercise of this governance across all of the institutions within the Quebec education system in response to the changes brought about by digital technology, from 2015 to 2017, the Government of Quebec has developed a Digital Action Plan for Education and Higher Education (DAP). In the same vein and inspired by the Quebec approach, the Cégep de La Pocatière has also developed its own plan.

These digital action plans, which are tools for governance, are mainly aimed at updating the digital skills of teachers, training professionals, and all those involved in the world of education, and also at increasing the ability of the educational community to adapt to the issues related to digital evolution. To this end, different digital skills related orientations and measures have been identified, both concerning actions involving physical material (infrastructure, technological resources) and human capital. We will focus our attention on one of such proposals, namely the community of practice called *Centre d'apprentissage en application pédagogique des TIC (Learning Centre for Pedagogical Application of ICTs)*, or CAPTIC, at Cégep de La Pocatière.

In an educational institution, communities of practice provide an opportunity for teachers to contribute asynchronously or synchronously to new know-how and allow the creation of new methodological proposals aimed at the integration and development of the skills required by the digital age. Each member of an educational community can broaden their knowledge through the integration of digital technology into educational activities for students, into the management of school records or into any other institutional practices existing within their own institution or other institutions depending on the outreach of the community of practice. It is also noteworthy that spending time with their peers potentially allows all those involved to connect more easily, in addition to learning knowledge and skills. In short, these places can facilitate innovation and the anchoring of digital technology within institutions, being therefore beneficial to both governance activities and the teachers.

This intellectual output has been developed within the framework of the project on Digital Anchoring in Institutional Governance (ANGE Project) resulting from an ERASMUS+ strategic partnership, deals with digital policies in the Quebec education system. This study highlights, first of all, a measure that has served since May 2018 as a foundation for the governance of all Quebec educational institutions in the integration of digital technology until 2023: the Digital Action Plan (DAP). It should also be noted that this measure, the DAP, is associated with a shared mode of governance that characterizes the power structure of educational institutions in Quebec. Furthermore, since all institutions must carry out this exercise as an extension of what has been defined by the Government of Quebec, we will conduct a review of the application of the DAP at the Cégep de La Pocatière. The Cégep de La Pocatière is a public institution of higher education in Quebec that offers technical and pre-university training and is part of a college network made up of 48 educational institutions grouped together in a federation that is a major player in Quebec's education system.

The second part of this study analyzes a strategy developed in order to boost the technological innovation in teaching and support teachers, which is recommended in the Quebec government's DAP and the CEGEP's DAP, and which focuses on two-way sharing of practices and learning within teaching teams. Cégep de La Pocatière has developed an original community of practice: *the Centre d'apprentissage en applications pédagogiques des TIC (CAPTIC)*. This type of community, its usefulness for governance, and its conditions of existence are examined first from a theoretical point of view to and next, to validate the theoretical considerations based on the CAPTIC. The CAPTIC model will also be presented in a short video that is largely inspiring to all stakeholders within the governance structure who want to use this device to anchor digital within their school.

Essentially, the objectives of this publication are to measure the contribution, conditions and requirements of digital stewardship for educational institutions and for its governance and teachers through a study of the communities of practice. The aim will be to measure the advantages and disadvantages of this collaborative practice for training and professional development in a context of innovation, change and governance.

In order to achieve these objectives, Chapter 1 directs the reader's attention to the DAP created by the Government of Quebec's DAP whereas Chapter 2 describes the DAP of the Cégep de La Pocatière.

Chapter 3 starts with an examination of certain concepts that are essential to our analysis, e.g. *communities of practice (COP)*, both virtual or face-to-face, *peer learning*, and *educational innovation and governance*.

Next, in Chapter 4, we present the conditions for implementing virtual or face-to-face COPs.

Chapter 5 examines the contribution and limitations of communities of practice for teachers and governance.

Chapters 6 and 7, based on all the elements that make up our DAP presentation and theoretical reflection, analyze, through a case study and interviews, a community of practice and peer learning through the *Centre d'apprentissage en applications pédagogiques des TIC du Cégep de La Pocatière (CAPTIC)*: an innovative teaching and support model at Cégep de La Pocatière that is in line with the types of measures proposed by the DAP of the Quebec government.

The table on the following page summarizes the steps involved in this work.

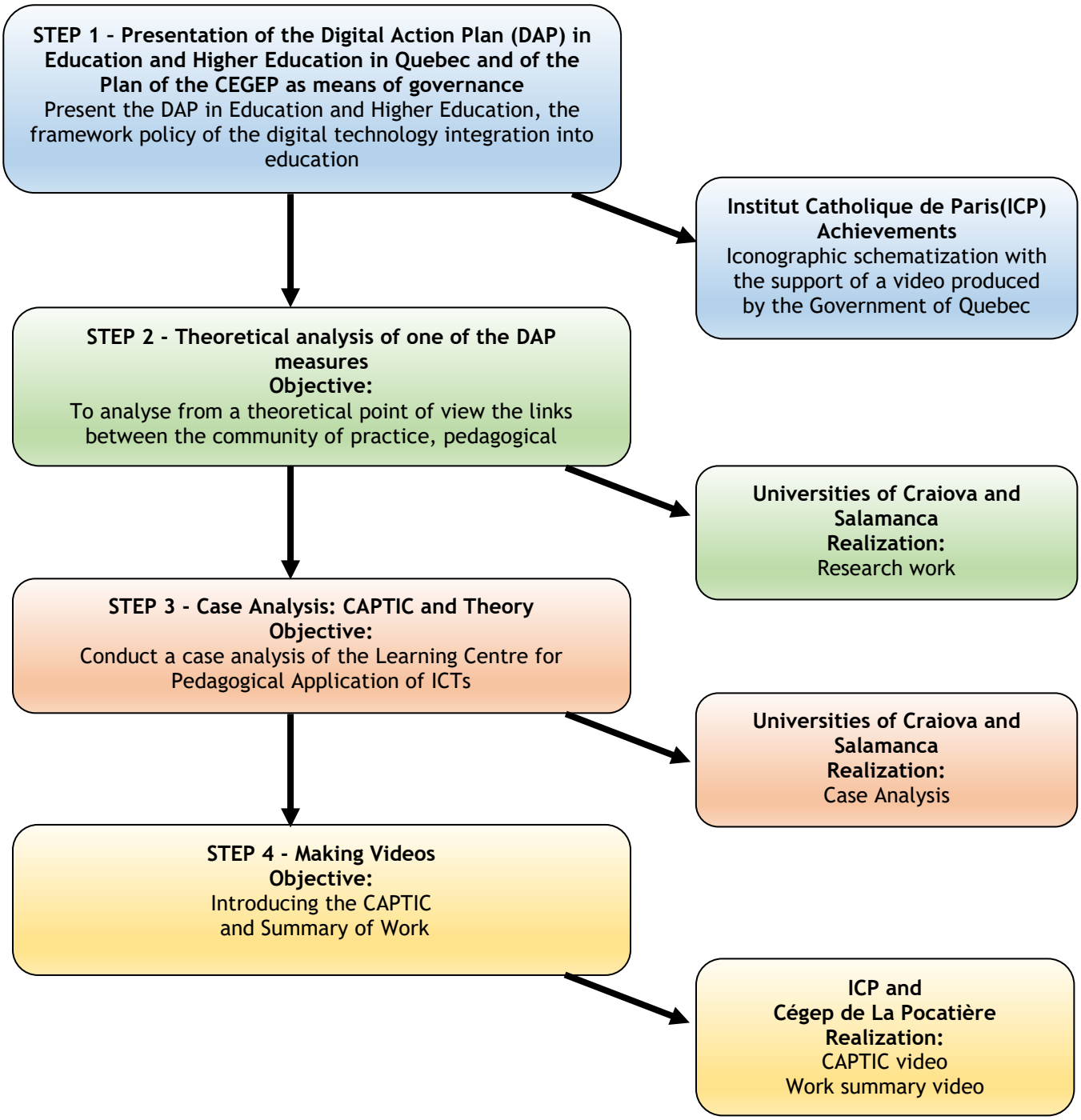

Figure 1: Intellectual Output O2 in four stages

CHAPTER 1: READING AND UNDERSTANDING THE DAP

Keywords: *Action Plan (DAP) of the Ministry of Education and Higher Education of Quebec (MEES), governance, stewardship, pedagogical innovation*

To establish and operationalize its digital strategy, in 2018 the Quebec government chose to provide a framework for its integration into educational institutions with a five-year digital action plan (DAP). Action plans are one of the governance mechanisms used by organizations to operationalize change. Before presenting the content of the DAP of Government of Quebec and the DAP of Cégep de La Pocatière, it is essential to recall the nature of contribution of this tool, the type of governance with which it is associated and certain elements that need to be considered for its efficient and optimal use.

1.1 Governance and Innovation Processes in Education

Nowadays, most discussion on pedagogical innovation is generally associated with the use of ICT in the classroom. The issue of innovation obviously implies investment in order to have the *cutting-edge technology*, but goes far beyond the idea of adding a new device in an educational institution. Indeed, the concept of innovation refers more to an idea, a practice, an artefact that is used in a creative or original way, to generate something new. Thus, when we talk about educational innovation, we are talking about creation: a new practice or use of methodologies, new approaches to technology for the stakeholders (García, Arenas Andoni, 2006). According to Carbonell (2001), innovation implies a series of decisions and processes that attempt to change the content and culture of educational practices.

As such, there is a close relationship between the concept of innovation and innovation in ICT, which is why it is necessary to refer to a clearer definition of the concept of innovation process and its characteristics. For Carbonell (2012), pedagogical innovation is not a simple concept that is part of a large ecosystem, but rather a process that analyzes, in addition to what happens in the classroom, what happens in the school, because innovation is a component of institutional culture. Innovation is based on institutional will. In this sense, governance is directly concerned by this issue since it represents, according to the reference definition adopted by the ANGE partners, “the structure and the process for making authoritative decisions on issues that are important to internal and external stakeholders within a university or educational institution.”

Good governance practices in digital innovation imply that the institution should ensure the presence of individuals who have techno pedagogical skills and a good understanding of digital technologies; in other words, people who are prepared and motivated by the idea of constant updating due to the rapid pace of digital change.

In educational institutions, governance is largely embodied by the management teams of the centres of power such as the ministries that are responsible for translating “educational policies and orientations” and for inviting stakeholders to innovate (Veyrac, Bos, and Chalies, 2018). Reference should then be made to a more global concept of governance, i.e. an “Art or way of governing that aims to achieve sustainable economic, social and institutional development, promoting a healthy balance between the state, civil society and the market economy” (Real Academia Espanola, 2019). This definition refers to the set of processes, organization, regulations and interactions leading to a given objective that characterizes public institutions like the ones that make up any education system. However, the objective the education system will always be to generate knowledge and ensure student success through innovative pedagogical practices adapted to the requirements and realities of each society.

In short, the term governance defines the nature of the decision-making process as well as the process that determines whether the decision is implemented. Although the responsibility for these rests with institutional leaders, such processes can be activated and steered by different stakeholders within the institution itself. Stewardship, on the other hand, uses the nature of leadership to drive change. Indeed, “it consists in gathering a set of relevant information, comparing it with a set of adequate quality criteria and making the decisions resulting from the process” (De Ketele & Gérard, 2007). A good governance structure becomes operational through the quality of its management. The stewardship is based on stakeholders who have at their disposal various management tools such as the one we are focusing on: the action plan.

1.2 DAP - A Governance Tool

In general, the management action plan is used to effect change because it identifies the nature and vision of the change to be prioritized, the orientations, the objectives, the desired actions, and the allocation of responsibilities within a given timeframe. Because of its logic of shared responsibility, this tool generally fits into modes of governance that are also based on shared power and collaboration. However, for governance to be effectively in collaborative mode, it will also be necessary for the members of the institution to share a common vision of the interests and

realities experienced by the institution, and even more so, for the stakeholders in a steering situation to adopt attitudes conducive to collaboration, as illustrated in the diagram below (Gestion HEC, 2015).

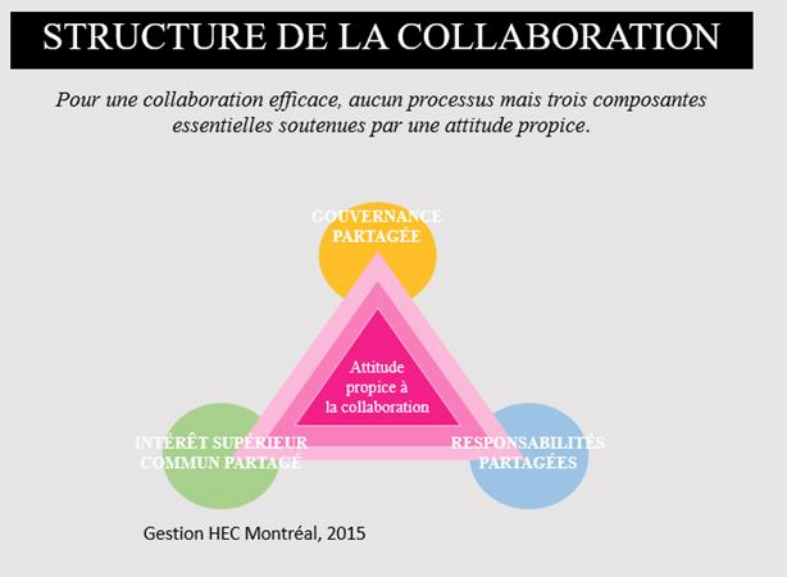

Figure 1.1: Collaborative governance structure

These attitudes conducive to collaboration refer to different competencies, particularly among those who lead change, including:

- Clear communication of the context, vision, goals for decision-making and prioritized actions;
- Planning of governance based on a logic of delegation and regulation and frequent interactions between units;
- Focusing management based on openness, trust, and autonomy;
- Adopting collaborative practices through digital technologies;
- Selection of decision-making strategies and consultation arrangements at appropriate points in institutional development.

The action plan is a good mechanism if it is accompanied by well-targeted consultations that are useful for operationalizing a shared governance mode. Moreover, the consultation is of great importance, as it facilitates the understanding of the change to be made by the various stakeholders and ensures better adherence to the actions to be carried out by all members of the

institution. This concern was considered in the development of the Quebec government's DAP and in the development of the DAP of the Cégep de La Pocatière.

1.3 Background and Context of the Quebec Government's DAP

Before designing the DAP, the Government of Quebec clarified its intentions through extensive consultations that resulted in the tabling of a digital economy action plan in May 2016 and an educational success policy in 2017 (Annex 1). Both of these government initiatives highlighted the idea of consolidating the development of 21st century skills, namely the digital skills. On November 13, 2017, the government unveiled a digital technology strategy, the main purpose of which was to establish priorities in order to position Quebec as an "innovative and highly performing digital society", to use the government's own words. This strategy called upon all ministries to develop a digital action plan. In May 2018, in response to the intentions of this strategy, the *Ministère de l'Éducation et de l'Enseignement supérieur du Quebec* developed a digital action plan with a broader scope, which was an extension of the 2011–2016 School 2.0 ministerial action plan, whose orientations were primarily aimed at the acquisition of digital educational resources (DER) such as laptops, interactive whiteboards and technological equipment. Within the framework of this new operation, a strong observation was made while developing the plan:
"The digital technology is transforming (…) not only in terms of pedagogy, but also in terms of work organization, infrastructure and governance." (Government of Quebec, 2018)

These transformations refer in particular to the deployment of distance learning, online learning classes, the use of high-fidelity dummies, reverse classrooms, and digital data management in school organization.

At the time when the plan was developed, according to data from a CEFRIO survey entitled *"Usages du numérique dans les écoles*" [*Usage of digital technologies in schools*], in the entire school network and in Quebec higher education, pedagogical innovations integrating digital technology were essentially based on the will of the stakeholders within educational institutions and the more or less strategic vision of adapting governance to digital technology (CEFRIO, 2015). In 2015, according to OECD data, neither Quebec, nor Canada, were among the societies that stood out for their integration of new technologies, like Australia, Denmark or Norway. Following a broad consultation with various stakeholders in and around education networks, the Government of Quebec noted that the education system had to meet three digital challenges (Government of Quebec, 2018):

- Facilitate stakeholder leadership and staff development;
- Optimize the use of digital tools for teaching and learning;
- Bridge the digital divide by providing better access to equipment and know-how.

According to the government, an adequate response to these various challenges will help Quebec's educational offer adapt to the issues surrounding the economic transformations required by digital technology, the impact of demographic aging, and the climate change.

1.4 Presentation of the 2018–2023 DAP for the Quebec Education System

The DAP covers a period of five years and is based on four guiding principles that address governance from the outset:

- A principle of collaboration between all stakeholders in the education system;
- A principle of flexibility so that the measures in the DAP are evolutionary and driven by a willingness to adapt;
- A principle of pooling, sharing solutions and ideas;
- A principle of fairness based on the democratization of the use of digital technology.

The 9 objectives and 33 measures proposed in the DAP are broken down according to the focus and guidelines adopted. Here are the orientations and areas of intervention:

Table 1.1: Orientations and areas of the DAP in education and higher education in Quebec

ORIENTATIONS	AREAS OF INTERVENTIONS
ORIENTATION 1 Support the development of the digital skills of young people and adults	**AREA 1** : Development of the training offer **AREA 2**: Digital skills and culture
ORIENTATION 2 Make use of digital technologies to enhance teaching and learning practices	**AREA 3**: Innovative practices **AREA 4**: Resources and services **AREA 5**: Distance education
ORIENTATION 3 Create an environment conducive to the deployment of digital technologies in the education system	**AREA 6**: Monitoring of educational progress **AREA 7**: Adapted and flexible governance **AREA 8**: Access

To implement the measures, the government has allocated $963 million over five years to support actions within schools. Each level of education is subject to the DAP and must translate the measures into concrete action. The following page presents a summary table of the DAP. Similarly, students from the *Institut catholique de Paris* under the direction of Michaël Bourgatte, as part of a learning activity, made a different iconographic representation of the DAP, which can be found in Annex 2.

Figure 1.2: Synoptic DAP of the Cégep de La Pocatière's DAP

1.5 Impacts of the DAP

One of the measures in AREA 1 consisting in establishing a reference framework of cross-curricular digital competencies at every level of education has been implemented as announced in 2019. The university group working on the integration of digital technology in education and higher education (GRIIPTIC - *Groupe de recherche interuniversitaire sur les impacts pédagogiques des technologies de l'information et de la communication en éducation*) was given a mandate for this project. The organization developed a reference framework based on consultations of the best practices of over a hundred sources. This reference framework is now the reference tool for the entire Quebec education system. Its overall objective is to foster the autonomy of all citizens through the development of digital skills useful for learning, work, leisure and all forms of participation in society. Digital competence brings together 12 objectives that call upon specific dimensions of digital use. The following is a graphic representation of the twelve dimensions of this framework.

Figure 1.3: Visual Representation of the Reference Framework

Examples of application in learning and teaching situations are presented for each dimension. Table 1.2 provides an example.

Table 1.2: Example of a Framework Objective and its Applications

Objective 1
Exercising ethical citizenship in the digital age
In a learning context – LEARNER
Verify the source and content of an e-mail before opening an attachment
In a teaching situation – TEACHER
When using a piece of music in the classroom, check the legal conditions for sharing this particular work.

As the digital action plan has only been in force for a year, it is still too early to measure its impact. In the college network gathering institutions that offer higher technical and professional studies, of which the Cégep de La Pocatière is a member, the CEGEPs have been invited to follow the lead of the Quebec government in developing action plans to facilitate the harmonious integration of digital technology. This tool comes at a time when the new resources invested by the government are prompting this planning effort. This planning exercise is a governance tool that has been present since the late 1980s in all CEGEPs for some 30 years, beginning with strategic planning. When done properly, planning is an effective lever for good governance practices. In fact, action plans are more specific modalities for this type of planning by specifying the nature of the desired change, the schedule, the responsibilities and the nature of the follow-ups.

CHAPTER 2: THE DAP, AN INCENTIVE FOR THE COLLEGE NETWORK

Keywords: *Action Plan (DAP) of the Cégep de La Pocatière, Centre d'apprentissage en applications pédagogiques des tic (CAPTIC)*

2.1 Background and Context

The CEGEP's DAP is part of the same trend as the DAP in education and higher education created by the Government of Quebec's. Furthermore, it is a logical extension of the Success Plan and Strategic Plan 2018–2023 of the *Cégep de La Pocatière*. This DAP is also a response to the policy on educational success tabled in 2017 by the Government of Quebec. The plan was developed by a working committee composed mainly of members of management whose work began in the early fall of 2018, with an internal analysis of the digital situation supported by the staff members and supplemented with input from external partner institutions experts in the integration of digital technology in education. A proposal for a DAP was then developed and a validation of the plan was carried out with pedagogical management and administrative services management committees. There was also a consultation with the Study Commission which brings together stakeholders from all spheres of the organization, including teachers, department coordinators, program managers, academic advisors and educational consultants. In June 2019, the work was approved by the Board of Directors and the plan was finally presented to the entire CEGEP staff in September 2019.

2.2 Presentation of the Current DAP

The CEGEP's DAP takes up the three orientations of the DAP in Education and Higher Education. In addition, the CEGEP has adopted a vision that reads as follows:

> *"The CEGEP strives for the effective integration and maximum use of digital technology to support staff members and student success, enabling them to develop and maintain their skills throughout their lives."*

However, the CEGEP has developed its DAP in a slightly different way from the Quebec DAP: it includes three areas (orientations of the DAP in Education and Higher Education), eight themes, and nine strategic objectives with 28 actions to be implemented by various stakeholders within a defined timeframe. All stakeholders are concerned by the DAP and its actions. The DAP of the Cégep de La Pocatière is presented on the following page.

Table 2.1: Graphic Representation of the Reference Framework

THEMES	STRATEGIC OBJECTIVES	STRATEGIC ACTIONS	RESPONSIBLE AUTHORITY
AREA 1: SUPPORT THE DEVELOPMENT OF THE DIGITAL SKILLS			
DEVELOPMENT OF THE TRAINING OFFER	Define digital skills and integrate them effectively into the training offer	1.1.1 Include elements of the ICT profile of students in the graduate profile of all programmes of study and ensure that they are taken into account in the programme summary tests.	Studies Directorate
		1.1.2 Maintain active participation in concerted intra- and inter-order projects aimed at developing training offer through digital means.	General Directorate
DIGITAL SKILLS AND CULTURE	Supporting the development of the digital skills of staff	1.2.1 Introduce a measure of digital skills into the hiring process for all staff.	Administrative Services Directorate
		1.2.2 Establish conditions to facilitate continuous access to training or upgrading aimed at developing the digital skills of staff.	Administrative Services Directorate
		1.2.3 Target and implement support and follow-up measures for the development of staff digital skills	Administrative Services Directorate
		1.2.4 Target and implement techno pedagogical support measures for personnel	Studies Directorate
		1.2.5 Redefine and publicize the mandate of CAPTIC.	Studies Directorate
	Supporting individuals and organizations in the transition to digital literacy	1.3.1 Implement actions aimed at enhancing innovative teaching practices.	Studies Directorate
		1.3.2 Define the opportunities, challenges and impacts of the use of digital technologies, including those that promote learning of good practice.	General Directorate
		1.3.3 Develop and implement a strategy to make organizations and businesses more aware of our digital skills training offer.	Extra Training

AREA 2: MAKE USE OF DIGITAL TECHNOLOGIES TO ENHANCE TEACHING AND LEARNING PRACTICES			
INNOVATIVE PRACTICES	Innovation in teaching and learning practices by relying on digital technology	2.1.1 Update existing active learning classrooms and deploy new digital equipment/classrooms.	Studies Directorate
		2.1.2 Diversify teaching and learning styles in our curricula.	Studies Directorate
RESOURCES AND SERVICES	Pooling resources and services to optimize access and promote the sharing of resources and services	2.2.1 Establish and implement a plan for the development of our libraries.	Studies Directorate
DISTANCE LEARNING	Promote the deployment of distance learning offers	2.3.1 Enhance our offer of distance learning courses.	Studies Directorate
		2.3.2 Ensure the development of good teaching and evaluation practices in a distance learning context.	Studies Directorate
		2.3.3 Strengthen the existing remote service offer and explore new avenues, with a view of optimizing the offered services.	Studies Directorate
		2.3.4 Define a recruitment strategy supported by the digital technology.	General Directorate
AREA 3: CREATE AN ENVIRONMENT CONDUCIVE TO THE DEPLOYMENT OF DIGITAL TECHNOLOGY			
THE EDUCATIONAL PATH	Ensure the deployment of solutions dedicated to the educational path both from an administrative and pedagogical point of view	3.1.1 Develop and implement a corporate plan for Enterprise Resource Planning (ERP) change management.	Executive Committee
		3.1.2 Implement a new ERP.	Executive Committee
		3.1.3 Monitor the work of the college network surrounding the deployment of an ERP research component and analyze the advisability of adhering to it.	General Directorate
	Strengthening digital governance and relying on	3.2.1 Define the role of the Governance Committee and establish its structure and working committees.	Executive Committee

A SUITABLE AND FLEXIBLE FRAMEWORK	partnership as a strategic lever	3.2.2 Develop and implement the investment and expenditure program (PDID).	Executive Committee
		3.2.3 Develop and implement the Information Resources Master Plan (PDI).	Executive Committee
		3.2.4 Emphasize cooperation between the various stakeholders at all stages of development of digital projects.	Executive Committee
		3.2.5 Explore the possibilities of pooling IT resources with our CCTTs and other partners.	General Directorate
		3.2.6 Maintain active participation in the various committees dealing with digital technology within the *Fédération des cégeps*, *MEES* and other partner organizations in education.	Executive Committee
ACCESSIBILITY	Ensuring fair and secure access to digital technology	3.3.1 Implement and monitor annually the maintenance and renewal plans for the IT infrastructure on the three campuses.	Administrative Services Directorate
		3.3.2 Continue the plan to secure our information assets.	Administrative Services Directorate

A review of the plan confirms that it meets the requirements of the Quebec government as set out in its DAP. The deployment of distance education, invitations to adopt innovative strategies integrating digital technology, and data management via digital technology in the school organization are constituent elements of the CEGEP's DAP. The CEGEP's DAP is posted on the intranet site available to all stakeholders. Each year, each service and department puts measures in their work plan to meet the requirements of the DAP. These measures will be validated during the annual review that accompanies this planning exercise. As with the Quebec government's DAP, it is too early to measure the impact since the plan has just been activated. However, this tool already seems to have consolidated our institution's digital culture, as concrete actions in our work plans now guide our concerns and operations.

To conclude this section, it is important to highlight the contribution of the DAPs. These planning tools offer a structured and holistic vision of the change brought about by digital technology in the education system and within institutions.

2.3 CAPTIC and the DAP

In both DAPs, *Support the development of the digital skills of young people and adults* is one of the three areas of the structure of these planning tools. For the Government of Quebec, the part of the DAP devoted to digital skills and culture focuses on fostering technical and pedagogical leadership, maximizing the role of staff dedicated to digital integration and developing innovative practices in institutions. As for the CEGEP, in 2013 the institution developed a Learning Centre for Pedagogical Application of ICTs (CAPTIC). This centre's mandate is in line with the government's intentions for the development of digital skills, a mandate initiated by members of the teaching staff. An innovative and original practice within the college network, CAPTIC is an illustration of the types of measures that can facilitate the integration of digital technology in schools and is an interesting governance strategy that will be examined in greater detail in the following chapters.

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The following chapters will illustrate through CAPTIC, one of the measures carried by both the DAP of the Quebec education system and the DAP of Cégep de La Pocatière. For the purposes of analysis, this question will be accompanied by theoretical considerations on communities of practice.

CHAPTER 3: STATUS OF THE ISSUE

Keywords: *community of practice (COP), peer learning, pedagogical innovation, ICT in education, governance.*

Area 2 of Quebec's DAP is aimed at improving teaching and learning through the potential of digital technology. One of the objectives in this area is to promote the pooling of resources to optimize access and encourage the sharing of digital expertise. One of the possible forms of pooling knowledge and skills that is increasingly popular in our education systems is the idea of communities of practice. This type of action is often associated with innovation, learning and continuous staff training.

In order to assess the contribution of CAPTIC as a community of practice, this chapter will define the concepts of peer learning, communities of practice, and learning, as well as highlight some of the uses and applications of these methods in the school setting. Finally, it will describe common spaces for sharing among communities of practice, pedagogical innovation and governance in the digital age. It will show how all these concepts need to be linked if teaching and learning processes in schools are to be effective.

3.1 Peer Learning and Training

Peer tutoring, *cooperative learning* (group work) and *peer assessment* are some of the terms used to refer to *peer learning*. The oldest and most studied forms of peer learning are *peer tutoring* and *cooperative learning*. Cooperative learning (CL) is more than working together - it has been described as "structuring positive interdependence"[1] in the pursuit of a specific common goal or outcome, and is likely to involve the specification of objectives, tasks, resources, roles and rewards by the teacher who facilitates and guides the interactive process in a structured manner. Peer training, on the other hand, can be defined as the acquisition of knowledge and skills through active help and mutual support by people within an organization of equal or similar status. This type of learning is also used for evaluation activities.

[1] Keith J. Topping, *Trends in Peer Learning*, Educational Psychology Vol. 25, No. 6, December 2005, p. 632

In education, peer learning, understood as a “two-way, reciprocal learning activity” refers to networks of learning relationships between students and their peers (D. Boud, R. Cohen, J. Sampson. 2001). In the general field of teaching and learning in higher education, many surveys have been undertaken on students working together and how to encourage them in courses, drawing on formal discourses on peer learning and on collaborative learning. These initiatives are part of a social theory of pedagogy, critically situating the central pedagogical goal of research pedagogy as a process of becoming a peer through participation in a research community.

Often, when referring to the issue of peers, specific reference is made to student learning and assessment, limiting its scope. However, as mentioned by Porras, Díaz and Nieves (2018), a teacher can contribute to the development of peers through observation and analysis of their activities. This type of approach can be beneficial for educational institutions, as it allows for the improvement of teachers’ learning and teaching processes, in addition to serving as a tool for updating, dialogue or qualification of teachers in training. (Porras, Díaz and Nieves, 2018). According to Porras, Díaz, & Nieves (2018), teachers’ interactions in their work as peers promote reflective practice as they question their own knowledge, learning processes, and the best methods to foster the professional development of their peers. Other authors such as Zwart, Wubbels, Bergen, & Bolhuis (2009) suggest that professional development can be enhanced by observing learning experiences, reflecting, and exchanging ideas when solving problems.
When we think of peer training, we could also talk about reverse mentoring, because this type of methodology, which can be observed in companies and also in education, is considered useful when it takes the form of a process in which the most experienced or most senior person in a position is responsible for helping the youngest or least experienced people to develop their skills. According to Zauchner-Studnicka (2017), reverse tutoring, experienced vs. inexperienced, is not always beneficial for those involved, since in the educational context knowledge evolves and changes over time due to socio-cultural and economic problems, and it is neglected that the experienced teacher may see in their partner new possibilities or innovative ideas to bring to the classroom. Indeed, the apprentice teacher may have a different and effective perspective in planning and carrying out their learning activities. Reverse support in this sense is more of a one-way street than a shared one.

Peer training, on the other hand, is a reciprocal interaction between people and this relationship can take place beyond the dyad, in small working groups. Typically operated in small groups of about six heterogeneous learners, collaborative learning often requires prior training to ensure

equal participation, interaction, synergy and simultaneous added value. In Quebec, in order to improve teaching and learning processes, initiatives have been implemented, such as triads. These triads were composed of two practising teachers and one experienced teacher. In addition, they were responsible for a group and their duty was to work collaboratively in the planning and execution of learning experiences. The results were largely positive, as this type of work made the practising teachers more innovative, the use of time more efficient and their classes more dynamic. Consequently, these triads demonstrated the effectiveness of collaborative work. However, in order to achieve positive results, it is necessary for all teachers to have the same level of commitment. The best part of working in triads is the opportunity to share ideas, implement them and analyze them with others (Stevens, 2013).

In conclusion, peer learning, whether in triads, small groups, pairs or in reverse, is an effective approach that helps to implement conscious teaching-learning processes, and encourages pedagogical reflection between experienced and inexperienced teachers, or between teachers who, with the same degree of pedagogical experience, can teach new ways of working in the classroom, innovations, didactic use of ICT, etc. The community of practice is part of this movement and pushes the potential of this kind of learning further by using the potential of digital technology.

3.2 Communities of Practice and Learning

In recent years, information technology has begun to permeate peer learning in different ways. First, distance peer learning in online communities has been widely explored. Through a digitally facilitated process of discussion and exchange, participants can help learners integrate new information into their prior knowledge and promote meaningful learning. The integration of digital technology in peer evaluation has allowed the use of online databases to record basic information, each phase of production, feedback, and performance. Learners can review their learning progress from an electronic portfolio. In a 2002 article, C. R. Graham reviewed research on creating effective collaborative learning in both face-to-face and virtual environments, focusing on creating groups, structuring learning activities, and facilitating group interactions (C. R. Graham 2002).

The arrival of communities of practice is closely associated with the emergence of digital working methods. Online communities of practice began in the 1970s, but it was in the 1980s that they gained popularity with an increase in the number of users with Internet access: scientists,

teachers, professionals, and academics were part of an online community (Harasim 2017). Among the world's best-known online communities of practice (CoPs) for educational purposes are the Global Educators' Network and Wikipedia. The Internet, as a channel for formal and informal media coverage, has provided platforms for sharing and interaction that facilitate the emergence of this type of community. This willingness to share has also been fuelled by rapid technological development and new fields of knowledge, creating the need for constant updating of our knowledge and skills, particularly in education.

Historically, communities were born to meet a common goal that rallied its members. Many authors argue that a community should be composed of equals, that is, in this case, by stakeholders with the same goal and sharing a common temporality (Díaz-Vicario, & Sallán, 2018). Communities of practice are defined as groups of people who share a common passion for a field and interact regularly to enhance their expertise. The concept first appeared with Étienne Wenger, who uses it in an approach different than the novice-expert relationship, focusing instead on the interaction between individuals and the participation of people engaged in the creation and sharing of knowledge (E. Wenger, 1998). In another study, Wenger defines communities of practice as "groups of individuals who share a concern or passion for something they do and learn how to do it better when they interact on a regular basis" (E. Wenger, 2013).

Therefore, communities of practice are groups of professionals who share practices, communicate frequently through informal channels, and develop a set of interdependent identities related to the work and cultural understanding of their group (A. Cox 2005). In communities of practice, learning has an interactive character, with the individual (in our case the teacher) having access to knowledge and information (as a result of the activities and experiments of other members) that they can easily transport and reapply in subsequent contexts and situations. In short, communities of practice are present everywhere. Although they are informally constituted and fall within a specific field of activity, these self-organizing systems have the capacity to create and use knowledge through organizational learning through informal or formal learning and mutual engagement.

Étienne Wenger sees communities of practice as the key to understanding how to deal with the complex knowledge challenges that most people face in organizations in the context of the knowledge economy (E. Wenger, 2000).

The components of the communities of practice are as follows:

- ***Population size*** (members): Size can range from a few specialists to hundreds of members. As the population size increases, there is a greater likelihood that the community will be subdivided, based on related characteristics such as geographic area or sub-themes, in order to optimize the activity and experience of its members.

- **Longevity** (duration): The development of the Community of Practice takes time, but can vary from a few months to a few years.

- **Means of interaction between members**: Communities of practice often begin with individuals who know each other and are co-located as a community of practice that requires regular interaction. However, as new communication technologies enable faster exchange of information, richer multimedia content and seamless integration of geographically distant members, communities of practice are also virtual.

- **The intra-or inter-organizational factor**: Communities of practice often emerge when a recurring problem is addressed by those affected within a public or private organization. Communities of practice are often a useful tool in an intra- or inter-organizational context to assist people in areas of activity that are subject to change all the time. By enabling the exchange of relevant information and technology among organizations that individually may not have the time, resources or manpower to keep up to date, employees are able to access a knowledge base of their peers (E. Wenger,2007).

In pursuit of their interests in their field, members engage in joint activities and discussions, support each other and share information. They build relationships that allow them to learn from each other and they care about their status with each other. A website by itself is not a community of practice. Having the same job or title does not make a community of practice unless members interact and learn together. Members of a community of practice do not necessarily work together on a daily basis.

In the field of education, educational institutions also face increasing challenges due to better access to knowledge. The first applications of communities of practice have been dedicated to training teachers or isolated administrators by facilitating their access to other colleagues. There is a wave of interest in these shared professional development activities. However, in the

education sector, learning is not only a means to an end: it is also the end product. For businesses, focusing on communities of practice adds a layer of complexity to the organization, but it does not fundamentally change the purpose of their work, whereas in educational institutions, communities of practice affect more traditional conceptions of learning, so calling upon them implies a much deeper transformation for this type of organization.

Although they imply a change in educational practices, communities of practice and learning can be powerful tools. They provide a thought nurturing space where, for instance, teachers can innovate or analyze their pedagogical practices (Espejo, & González, 2014). It is necessary that teacher training and updating take place in a space that encourages reflection on the different aspects that make them up, i.e. planning, implementation, and analysis of the processes carried out in the classroom, giving practical examples with defined and synchronous contexts. In fact, studies on organizational change in the field of sociology of organizations increasingly use a practice-based collaborative learning perspective to explain the role of agents in institutional change (E. Wenger 2007). Moreover, some studies on schools have shown that institutional leadership is crucial in responding to state reforms or other forms of change observed in the labour market and society in general.

In short, the notion of communities of practice refers to the notion of communities of learning. These two notions are closely linked because they provide thought and change nurturing spaces where experienced stakeholders or those in training can share professional and experiential knowledge and skills face-to-face or virtually. In the world of education, these communities are intended for all levels of education (early childhood, primary, secondary or university). However, those who are part of them must share the same conscious objective of welcoming innovation initiated by digital technology in our understanding of knowledge, learning activities, and the educational environment.

CHAPTER 4: CONDITIONS FOR IMPLEMENTING LEARNING COMMUNITIES AND PEER EDUCATION

4.1 Implementation Conditions for Institutional Governance

4.1.1 Stewardship Community, Leadership and Teachers

For a community of learning and practice to be possible in an educational institution, a culture of innovation must be created within the teaching and learning processes. For this reason, the management team must provide leadership based on effective resource management, particularly in the choice of stakeholders driving change, a good understanding of the needs of the student community and the socio-economic context in which the institution is located. In other words, leadership that enables the embodiment of pedagogical innovations. Romero, Cázares, & Barrera have developed a typology of leadership styles within school organizations and have clearly identified the one that is conducive. These authors stress the importance of granting autonomy to stakeholders within schools and of prioritizing shared power governance that values and supports initiative and creativity. Below is found the classification of leadership styles. It is to be noted that transformational leadership is the one that has been prioritized to foster pedagogical innovations.

Table 4.3: Leadership Styles (Romero, Cázares, & Barrera, 2017, p.11)

Styles	Features
Authoritative	Unidirectional Leadership Leader-centred power and decision-making
Democratic	Collaboration and participation of group members
Laissez-faire	Leadership not assumed
Transactional	Exchange process between the leader and followers. Performance-based awards or sanctions
Distributed	Participatory and collegial Authority, Autonomy and Responsibilities to Employees
Transformational	Participatory, trust in people, interpersonal communication, Performance criteria based on ethics and moral principles. Change leadership.

Beyond this leadership, the support of governance within an educational institution depends on many factors. On the one hand, as already pointed out, the following elements must also be present: the capacity to plan and execute projects, and the availability of resources to initiate and support change. On the other hand, the composition of individuals involved who meet the profile and requirements of the sought change is also important. Similarly, all agents of change must have the ability to work cooperatively and collaboratively to make the innovation work.

In this sense, we should not capitalize on the contribution of a single individual, but on the diverse expertise of each member of the group, thus enabling the dissemination of knowledge, practices and experiences for the greater benefit of the entire group. As such, three types of members are part of a community of practice: the core member (the pilot), the active (main) members and the peripheral members who benefit from the work of the active members.

For the stewardship, other specific conditions for implementing such a community of practice can be added (Borzillo, Shmitt et al. 2011):

- The permanent concern of the initiator(s) of the community of practice to keep contact with all members, also with peripheral members to maintain a continuous interest in the activities of the community;
- Concern and follow-up on the needs expressed by the members;
- Continuous contact with all members of the community (which shows the need for communication and facilitation skills within the network);
- Dialogue skills and feedback of a cognitive and socio-affective nature;
- Skills to be able to participate or create a friendly and responsive atmosphere within the community of practice. The following table shows the leadership styles that might exist in different organizations.

For active members, it appears important to:

- Translate principles and features of pedagogical innovation into individual classroom practice;
- Feel part of the development and change process with others and develop a sense of ownership of this process;
- Be a mediator, a source of experience and information, and act as such. This is necessary to obtain support;
- Cultivate close links with the rest of the teachers that make dissemination possible.

In short, there is a need for people who assume leadership and are capable of managing all the spaces that are part of an educational community, all the while giving clear instructions with well-defined objectives, in addition to creating a quality work climate and thus encouraging collaboration among the different members of an institution. This is also how Krasnoff defines it when he points out that there are opportunities to create high-quality learning environments through research and the continuous transformation of pedagogical processes (Kraskoff, 2015). Because, as research shows, managers are the fundamental key to performance and innovation in institutions.

Research and practice confirm that there is little chance of creating and sustaining a high-quality learning environment without competent and committed instructional leadership to shape teaching and learning. Research has clearly demonstrated that school leadership is a key component of school performance, especially if the school has large numbers of low-performing and/or poor and minority students (Krasnoff, 2015).

4.1.2 Governance and Community of Practice

As governance raises the question of the terms of planning, decisions and actions to be undertaken within education systems, these terms are generally discussed while keeping in mind three areas (Germain, 2018):

- Performance, i.e. greater relevance so that each decision must be made at the most relevant level;
- Effectiveness aimed at improving professional practices for student success;
- Equity in obtaining pedagogical responses must be appropriate for all students.

The main challenges faced by education in terms of educational governance stem from the **lack of inclusion** (democratic governance), **equity** (equitable governance) and **public accountability** (transparent and unquestionable governance) (Germain 2018). It is important that these requirements of good governance be systematically integrated into institutional policies and sector-wide approaches, particularly in the process of creating communities of practice.

Among the components that enable the development of the community of practice are those related to governance: the *technological environment*, the *professional environment* and the *participation environment* (Lise Renaud et al. 2017).

- **The technological environment** – this refers, in particular, to digital development, which enables the development of the community of practice. The accessibility of communication platforms, the ease of a secure access process, the availability of tools and equipment are essential elements.

- **The professional environment** – this is a key factor for membership and participation in the community of practice (institutions should facilitate the release of time for teachers who are part of communities of practice to participate in activities).

- **The participatory environment** – *i*t is important to foster a link between members, share their professional and organizational culture and bring out common values. In order to encourage teachers to participate, it is important for the community to develop a sense of belonging among the members of the community of practice. The sense of belonging to the group and the influence that each member can exert are motivating factors for participation.

McDermott talks about four key challenges in building communities, challenges that the organization can overcome if it can rely on more fluid and flexible learning environments. The four challenges are:

- The **technical challenge**: to design human and information systems that not only make information available but help community members think together;

- The **social challenge:** to develop communities that share their knowledge, while retaining sufficient diversity to encourage reflection rather than copying;

- The **management challenge**: to create a work environment where knowledge sharing is truly appreciated;

- The **personal challenge**: to be open to the ideas of others and maintain a thirst for developing the community's practice (Richard McDermott,2000).

These challenges should be addressed with appropriate and viable responses in order to ensure the outreach of the community of practice. The nature of these sustainable responses is indicative of the nature of the governance that will be exercised.

Wenger, McDermott and Snyder identified seven key design principles for the creation of effective and autonomous communities of practice, specifically related to community management, although the ultimate success of a community of practice will be determined by the activities of the community members themselves. Within the framework of stewardship of a best practice community, it is important to consider the following aspects:

- **Respect for the common interest**: ensure that the community can evolve and change its focus to meet the interests of the participants without straying too far from the area of common interest;

- **Internal and external dialogue**: encourage new perspectives from outside the community of practice;

- **Different levels of participation**: accept different levels of participation. Core members (most active members) are those who participate regularly. There are others who follow discussions or activities, but do not play a leading role in making active contributions. Then there are those, probably the majority, who are on the periphery of the community, but can become more active participants if the activities or discussions begin to involve them more. All these levels of participation need to be accepted and encouraged within the community.

- **Development of public and private community spaces**: encourage more personal or private individual or group activities, as well as general more public discussions. For instance, individuals may decide to blog about their activities or, in a larger online community of practice, a small group who live or work nearby may also decide to meet informally in person.
- **Shared values of pooling**: explicitly try to identify, through feedback and discussion, the contributions that the community values most, and then focus discussion and activities on these issues.

- **Appropriate enthusiasm:** focus on common concerns and viewpoints, but also introduce radical or challenging perspectives for discussion or action.

- **Community specific rhythm:** encourage a regular programme of activities or focal points that bring participants together regularly, within the constraints of time and interests of participants (Richard McDermott, 2000).

An Ontario study identified five areas of concern for good governance in the case of innovation related to digital use. A successful digital shift of any kind requires an informed vision and commitment on the part of principals and teachers, structured planning based on stated goals, and adequate digital resource support, which are the elements on which the governance must focus. If one element of this equation is missing, there might be consequences resulting in preventing the innovation. The consequences will vary depending on the nature of the factor that is lacking and may be multiple if more than one factor is not active or only marginally active. For example, if a school does not disclose its vision of the changes to be made and the reasons for doing so, and places little importance on members' adherence to institutional orientations, it is possible that the stakeholders within the school organization have little understanding or do not understand at all the motivations inherent in the change and question the resources allocated for its implementation. In other words, this failure within the governance structure is a vector of confusion for researchers since it generates misunderstanding. For instance, it would be preferable to consult with members of the school community on their own understanding of the organizational situation and the desired changes. The exercise of designing an action plan within a shared governance logic could be a possible avenue. The figure below presents all the results of this turning equation when the turnaround is or is not successful.

Equation of the shift to the digital age in a school

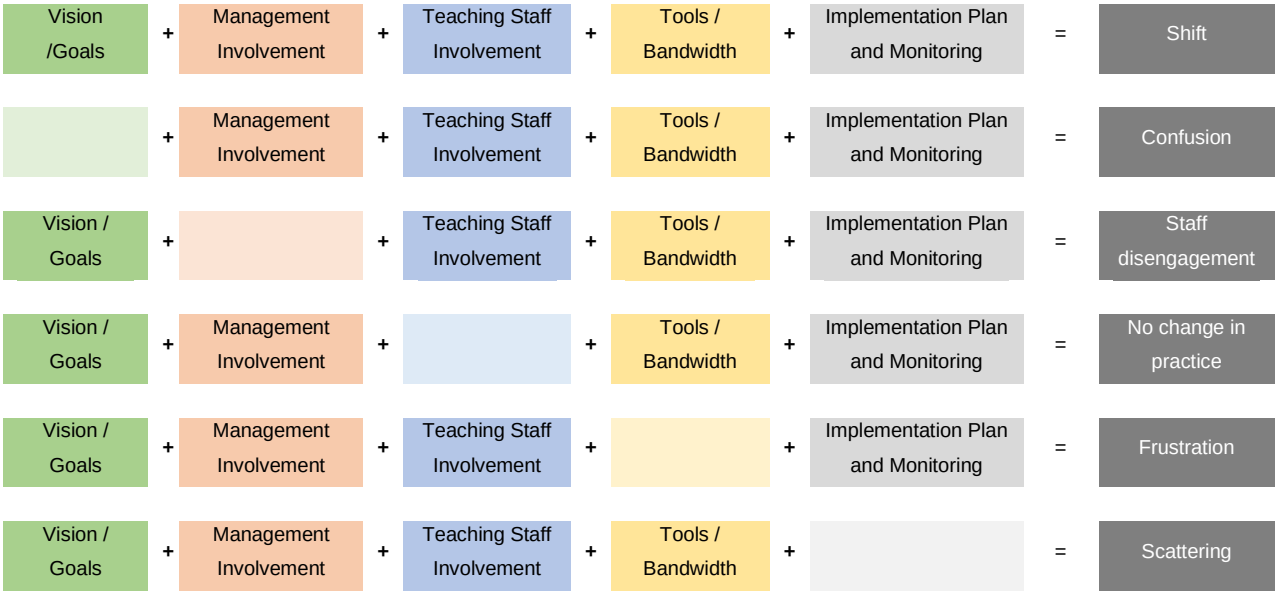

Figure 4.1: Equation of the shift to the digital age in an educational institution (TacTic, a CFORP team, *Guide d'accompagnement des directions d'écoles*, 2014)

The importance of creating the right conditions for a digital shift is echoed by the Organisation for Economic Co-operation and Development (OECD). The OECD calls on educational institutions to develop a form of leadership or governance whose role is to ensure that all members of the educational community can learn continuously and adapt to new societies that are rapidly changing as a result of information technology (OECD, 2009). Therefore, in addition to understanding the environmental conditions and challenges associated with communities of practice, it is necessary for leaders to pay particular attention to the development of digital skills through the ongoing training of their staff, among many others. In the area of political governance reforms, the education sector in both Europe and America is strongly marked by a major trend: the move towards greater institutional autonomy. This development is particularly taking place in a context of a changing role of the State and budgetary restrictions. Communities of practice as a mechanism for continuing staff training are an interesting choice for the governance of educational institutions.

Communities of practice succeed if they bring value to both their members and the organization. If they do not create value for members, members will not participate or will soon be disengaged. Many communities of practice allow the free flow of ideas to develop and the exchange of information is considered to be the most useful and stimulating way to find inspiration for professional activities. At the same time, communities of practice promote the development of intercultural competences: a community of practice has the potential to develop intercultural learning and intercultural competences, especially in the case of an international community of practice. In short, in a community of practice (especially in an online community of practice), it is essential to have a very clearly identified facilitator who has the right skills (especially digital), who is enthusiastic, and who has solid experience in digital technologies and in solving major problems as they arise, thus contributing to the overall success of the community of practice. Finally, for a community of practice to be successful, there must be periodic meetings with solid input from each of its members, an analysis of all the actions carried out and follow-ups, and everyone must be able to develop new, effective, and innovative learning experiences.

To conclude, in order to have a community of learning or practice with clear innovation processes in the implementation of ICT, not only as a tool, but also as an element contributing to the teaching and learning processes, it is necessary that school management and teachers have specific competences and adopt well-defined strategies. It is a combination of ingredients that make the educational environment a fertile soil for the emergence of such a community.

CHAPTER 5: BENEFITS AND LIMITATIONS OF COMMUNITIES OF PRACTICE FOR TEACHERS AND GOVERNANCE

This chapter will discuss some of the positive and negative impacts of communities of practice or learning communities for teachers and principals in school governance arrangements.

5.1 Positive Aspects of Virtual and Face-to-Face Communities of Practice

One of the advantages of communities of practice is that they offer the possibility to innovate, i.e. to introduce and adopt new practices that can be created, configured or transferred in a given context. Peer learning provides an opportunity for innovation because, when practitioners consult each other to resolve dilemmas, they can learn new practices from their peers. Practitioners facing difficulties in shared practices can also resolve these dilemmas by generating new alternatives to existing practices (W. McLaughlin, Milbrey, J. E. Talbert, 2001). It should also be noted that communities of practice can be very effective in a digital world, where the work context is volatile, complex, uncertain, and ambiguous.

Another advantage mentioned in the previous chapters is that a community of practice, both face-to-face and virtual, is a space for thought on teaching-learning processes, not only of students, but also of trainee teachers or teachers who carry out updating processes with new technologies or current teaching methods. In addition, collaborative learning allows members of a community to enrich and build new didactic and practical knowledge applicable in their classrooms (Bedoya González, Betancourt, & Villa Montoya, 2018).

For the participants, this type of community also has its particular advantages. Communities of practice are not dependent on any particular environment as people can meet in person or socially or at work, or participate in online or virtual communities of practice (Igor Pyrko, Viktor Dörfler, Colin Eden, 2017),

Some of the main **individual benefits** for teachers may include:

- Greater efficiency and satisfaction at work;
- The development of competencies;
- The sense of belonging;
- The increased reputation of each person who contributes to the community;

- Saving time.

The main **benefits** for the **group of participants** include:

- Faster sharing of knowledge;
- Increased problem-solving capability;
- An increase in trust in collective skills;
- Easier consensus when looking for alternative solutions;
- Consolidation of the community's legitimacy and network outreach.

Members develop a high level of trust, disseminate new knowledge and know-how. They identify key issues themselves and provide answers. The pleasure of learning and creating individual and collective knowledge together generates increased commitment.

The experts have noted series of benefits of communities of practice. Among others, it has been noted that these communities create new relationships and these relationships, by sharing common working practices, stimulate a sense of belonging and develop a knowledge strategy. Governance plays a key role in organizing, coding and transforming explicit and tacit organizational knowledge. It can create an environment conducive to creativity and innovation, serving as a vehicle to stimulate organizational learning by contributing to the development of the social capital needed to share organizational knowledge. Good governance makes it easier for organizations to adapt to environmental and market changes.

The main benefits for the organization are a greater capacity for innovation and increased operational efficiency. According to Liedtka, communities of practice are related to specific competencies such as continuous learning, participative leadership, collaboration, strategic thinking, and total quality management, which highlight a more competitive advantage widely referred to as meta-competencies. Meta-competencies enable organizations to adapt or change the environment and the market, and when found in communities, organizations (and, of course, school organizations) have the capacity to act competitively in order to:

- Learn new skills on an ongoing basis;
- Converse, learn and work more effectively by collaborating across formal organizational structures;
- Redesign processes and continuously enhance efficiency and quality from the client's perspective;

- Respond to local opportunities and maintain a strategic vision;
- Foster the continuous coevolution of individual and organizational meaning through participative leadership (J. Liedtka, 2000).

However, communities of practice should not be seen as a miracle solution, allowing an organization to disseminate knowledge in a transparent manner, or to overcome organizational and social barriers. Given the growing importance of knowledge management, both internal and external to the organization, it is imperative that communities of practice be understood in terms of their boundaries. Despite the potential value and contribution that communities of practice offer to organizations, there remain unresolved issues and challenges that are not easily apparent.

5.2 The Limits of Virtual or Face-to-Face Communities of Practice

The first challenge or disadvantage faced by communities of practice is the availability of time to engage in the activities necessary for them to be effective. Second, it should also be noted that communities of practice are often designed within established organizations, and as such, must coexist with a pre-existing organizational hierarchy.

At the same time, a community of practice, as a social configuration, is likely to reflect the broader social structures, institutions (or lack thereof) and socio-cultural characteristics present in the broader environmental context in which it is situated. As such, societies with strong social structures and a socio-cultural environment that values community over individuality may also have stronger and more effective communities of practice (J. Roberts,2006).

While potential limitations have been identified, it must also be recognized that the community of practice approach and its applicability to knowledge management is still relevant, and that despite these limitations, a community of practice provides a useful, alternative, and interesting tool to more traditional approaches to knowledge management in organizations.

5.3 Areas for Improvement in a Virtual or Face-to-Face Community of Practice

Since we are talking about teachers and human beings with different capacities, knowledge and skills, a community of practice can generate a prior rejection among the teaching staff if the necessary motivation is not given, as we will always find teachers for whom the idea of learning from their peers does not make sense, especially if their peers are younger or are hosted in more

classic educational practices. This resistance is even greater if such practices are to be carried out in a virtual environment. This vision may be given at the beginning of a community of practice, but it may change once different virtual or face-to-face encounters have taken place, because its members see that, through communities of practice, their training and professional development can improve and change (Gómez & Silas, 2015). On the other hand, many teachers do not have the digital skills to participate in virtual communities of practice, an aspect that often generates rejection and lack of interest in certain activities. Some community members manage to overcome this step, generating dynamism and opportunities for advancement in the communities, but others contribute to generating tensions and interrupting the fluidity of many processes.

Larouche, Biron, & Vaillancourt (2019) discuss some of the difficulties that arose in a community of practice formed for teachers over three years. These authors found that many community members were destabilized by the new content they read and learned. For this reason, their teaching practices, when they tried to modify or explore new opportunities, were not robust. Similarly, some teachers were reluctant to consider new ways of communicating their learning experiences.

Within this community, there were times when the teachers suffered from dispersion and their participation was not the same in the different meetings, which generated moments when everyone's interest was affected by the quality of participation of some.

The teachers were afraid to leave their comfort zone, where they had achieved results, but which could be improved. For this reason, many teachers found it difficult to explain their practices and were unable to share with their peers their previous proposals or experiences (Larouche, Biron, & Vaillancourt, 2019).

The position of teachers varies from negative to positive when it comes to their participation in virtual learning environments and learning communities. Morado, & Ocampo (2017) present us a study in which 149 teachers who are part of a creative experience with virtual environments go from thinking that learning is complex, due to the fact that many environments have little support, are not very creative, hardly expressive, cold, etc., to considering that through techno-pedagogical support, there could be benefits for any member of a community, which makes the learning process more agile, practical, interactive, elaborate and simple. In other words, the members of a community, whether virtual or face-to-face, move from a phase of destabilization due to their

beliefs and theoretical learning, where they are rejected, to an approach of openness where, if the right conditions are met, they feel motivated to reflect together on new ways of generating and putting into practice teaching and learning processes through ICT.

CHAPTER 6: *LE CAPTIC* CASE STUDY AS AN EXAMPLE OF A COMMUNITY OF PRACTICE

As we pointed out at the beginning of our work, after the conceptual approach of communities of practice and peer learning, the conditions of their implementation and the analysis of their advantages and disadvantages, our intention in the second part is to present a case study, CAPTIC, which is a learning centre for the pedagogical application of ICT, or as they define themselves, an innovative model of support. The intellectual output in which we participated as part of the ANGE project focused precisely on the analysis of a specific community of practice responsible for informing, training and accompanying teachers at the Cégep de La Pocatière, who are particularly interested in the nature of this centre, dedicated to the pedagogical integration of ICT.

6.1 Methodological Aspects: Case Study

In social science research, case studies are particularly used in sociology and anthropology. Qualitative in nature, this research method is based on an interpretative approach to the analysis of phenomena. Indeed, researchers using qualitative research methods generally adopt an interpretative approach, i.e., they are interested in the meaning of the phenomena they observe and most often study unique, specific or extreme phenomena. Moreover, the aim of such qualitative research is to highlight processes and to show how things become what they are. For instance, a case study would be appropriate to study the processes of organizational change.

As García-Valcarcel (2015) also points out, the case study is a type of exhaustive research that addresses the complexity and uniqueness of a given project, institution or programme from a plurality of perspectives depending on the stakeholders involved. The primary objective of the case study is to achieve the most complete understanding possible of a specific topic in order to generate knowledge.

The research opportunities underlying the case studies include a number of different objectives, as outlined by Simons (2011):

- Document a phenomenon with multiple perspectives;
- Analyze different points of view on the same reality;
- Demonstrate the extent to which the stakeholders and other members involved influence each other and interact;

- Explain why and how certain events occur.

Overall, the case studies are useful for researching and understanding the process and dynamics of change. By describing, documenting and interpreting what happens in the real scenario, it is possible to better understand the phenomenon under study (García-Valcarcel, 2015, p. 32).

Many ways of conducting case studies can be found in the literature several of which are related to more phenomenological and ethnographic research methods. In each of them, researchers attempt to comprehensively analyze the events through the testimonies of the different stakeholders, as well as the relationships between the facts and the different interactions in order to understand a given phenomenon. According to Heineman (1981, pp. 378–381), the hypotheses underlying the interpretative logic of research are that there is no pure perception, since all observation is modulated by theory, and the distinctions between theory and observation, and between observers and observed, are not always immediately obvious. From this perspective, the researcher is considered the preferred instrument of research, since a primary source of data is the researcher's experience during the study (Eisner, 1981, p. 8).

In this study, the case was defined as an example of a community of practice and learning, in which, through different methodologies, such as peer learning, teacher training processes and professional development, the ICTs are promoted in the field of curriculum integration. It is therefore an exploratory and analytical case study, attempting to describe this community of practice to strengthen the theoretical analysis carried out earlier in this work.

6.2 A Few Preliminary Considerations for the Preparation of the Case Study Organization of Information Gathering Activities

To conduct this case study, two interviews were held – one with the management team and the other with members of CAPTIC. These interviews were initially proposed by the master's students and then adapted by the group of researchers from the Cégep de La Pocatière. The interviews were conducted by videoconference, and several tests were performed beforehand to ensure they proceed smoothly. The interviews were conducted on April 8 and April 10, 2019. The following table presents the schedule of activities.

Table 6.1: Timeline of interview activities

Activities		February				April				May				June				July				
Realization phase																						
Development of the interview guide	Students with the collaboration of Cégep de La Pocatière																					
Validation of the interview	Cégep de La Pocatière, Quebec City, Quebec																					
Conducting the interview	Students						8	10														
Transcript	Students																					
Implementation interview chapter	Students																					

6.3 Instruments for Collecting, Implementing and Reflecting on Some Perceived Limitations

A semi-structured interview was chosen for data collection since it offers a certain freedom in the interview while pursuing defined objectives. The interview grid consisted of twelve questions. The first six questions were answered by members of the school management team and teachers. Questions 7 to 11 were answered only by members of CAPTIC. Finally, only the director of studies was asked to answer question 12. These interviews were conducted via two video conferences. The questions focused on the following elements (Annex 3):

- The description of CAPTIC and its mandate;
- The way it works and the role of teachers;
- The support of the CEGEP;
- Limitations as a community of practice and peer learning between;
- Usefulness in the training and professional development of teachers in a digital environment (see interview in Annex 1).

The first interview took place in the presence of two people, the director of studies who is the head of the school responsible for pedagogy, and the person working alongside him, i.e. the deputy director of studies. A second interview was conducted with three teachers and an educational consultant who acted as a link between resources and needs in the school. The interviews were conducted by the students and their content was completed and validated by the CEGEP researchers. Other interviews were conducted by the researchers to supplement the gathered information.

6.4 Limitations of Qualitative Research

This case study has some limitations. Students pointed out that:

- The number of people who took part in the interviews: often the small number can prevent the researcher from having all the information about the subject of the study. For example, in the course of our research, we met with four people at a time; for more information, we would have needed to meet with more teachers, leaders or trainers;

- Interviews were conducted in groups, not individually, and online, which sometimes led to misunderstandings;

- The means of conducting the interviews (online) may prevent observation of the body language (non-verbal behaviour) of the interviewee;

- Another limitation was the time allotted for interviews.

These limitations, however, were largely mitigated by additional information provided by the research team.

6.5 Presentation of Interview Results

6.5.1 Emergence Context

The idea of creating a CAPTIC emerged following an evaluation of the needs related to digital technologies and techno pedagogy among teachers at the Cégep de La Pocatière in 2012, conducted by the Cégep de La Pocatière's educational consultant, who was also a REPTIC - the

college network's ICT respondent. This network is a community of practice that brings together educational consultants from the 48 CEGEPs in the province of Quebec. During this data collection, teachers mentioned, among other things, the lack of time for training in new technologies and the difficulty in keeping up with digital changes. CAPTIC was intended as a response to these two difficulties in order to ensure more user-friendly access to training in digital pedagogy.

6.5.2 CAPTIC Operating Characteristics

Since its creation in 2013, the CAPTIC brings together 4 teachers each year under the supervision of the educational consultant. In other words, five people are dedicated annually to digital integration in teaching for about a hundred teachers.

The selection process is based on a call for projects. All interested teachers can apply and submit a project related to the pedagogical integration of digital technology. A joint committee composed of members of the management and teacher representatives chooses the most promising projects. This decision is made at a meeting of the Labour Relations Committee (LRC). The choice of teachers is therefore a shared responsibility translated to a choice of a mode of governance to reinforce the legitimacy of the chosen stakeholders.

CAPTIC members are selected every spring. Once this step has been completed, each teacher is freed in the fall for the school year from part of their duties to carry out their project and activities within CAPTIC. In this way, they can devote time to pedagogical innovation or sharing of expertise. It should be noted that the project involves two phases: carrying out the project and decimating new skills or doing short training sessions related to the activities of CAPTIC. It is very varied and depends on the dynamic and objectives that CAPTIC sets for itself annually in its work plan.

Similarly, CAPTIC collects needs to offer the required support and training. Since the CEGEP has three campuses in distinct geographic locations, CAPTIC is both a place for training and exchanges of practice. CAPTIC also conducts techno-pedagogical monitoring. This mandate falls more specifically into the scope of work of the educational consultant who cooperates closely with the other teachers. Consequently, CAPTIC is a peer learning community for some and a community of practice for others who rely more on its virtual component. REPTIC, a member of CAPTIC, can play the role of a facilitator to network the teachers targeted by CAPTIC or even CAPTIC teaching members to different communities of practice.

In short, CAPTIC is a virtual and face-to-face place where teachers can practise and learn all that is necessary for the use of digital technology in a *classroom.* CAPTIC tries out and promotes techno pedagogical tools. This ensures a form of continuous training within the CEGEP and encourages the sharing of certain good practices. The same idea was put forward by the headmaster who, during the interview, told us:

> *"What is interesting about CAPTIC is that teachers have to appropriate certain digital tools to support pedagogy and then in turn support their colleagues in the development of their skills." - Steve Gignac, Director of Studies.*

This means that CAPTIC represents an opportunity for teachers to gain the necessary experience in the use of digital tools. On the other hand, one of the interesting features in the functioning of CAPTIC is that teachers can get individual or group help through courses that are programmed by them.

CAPTIC offers lunchtime training webinars on specific topics or sharing the results of pedagogical experiments and discussing with the entire teaching community. CAPTIC also responds to occasional requests from teachers.

> *"(...) for example, if I have difficulty using an interactive whiteboard, I can ask a CAPTIC teacher to come and help me use the tool. The help can be individual, but they also do group activities." - Annie Fortin, Assistant Director of Studies.*

6.5.3 Description of CAPTIC Activities

Some teachers can testify about their experience with the activity at CAPTIC. Jade told us about a classroom activity - reversed.

> *"(…) One of our colleagues, Jade, did a testimonial workshop, so to speak, on her appreciation of reverse class. In her physics class, she had tried the reverse class and had been able to tell us what it takes to do it, what the advantages are, what the disadvantages are; she can really paint a complete picture. Then after that, we can decide if it's something we're interested in and whether we want to go for it, based on the testimonials we've received (…)"*

Another testimony was given by Stéphane who had this experience last year as an IT teacher.

> *"(…) so Stéphane had this mandate, to explore that and he gave a first testimony about his experience and then he was recruited by the organization to train all the staff in the use of digital technology, Office 365 in this case, and sometimes it bursts the number of requests for training and then it opens on other horizons too (…)"*

6.5.4 The role of teachers in CAPTIC

The role of teachers in CAPTIC is mainly one of support. Therefore, the teacher who is part of the CAPTIC can support another teacher in the classroom to help them experiment with the new tool. Then, there are cases where teachers use CAPTIC to share their experiences internationally, as a result of mobility or exchanges, particularly during the ANGE Project, a project in which the Cégep is a partner.

> *"There is a training mandate as well, to train in new uses in order to generalize the use of educational technology. So, we organize lunchtime meetings, where we target colleagues who have developed a particular expertise. Next Friday, Stéphane Deletre, a computer science teacher, will talk about his stay in Paris in January and his discoveries in terms of technology. Mélanie Bérubé, a mathematics teacher, will talk about her trip to Bulgaria in the fall. We have a mandate to identify people who have interesting things to share and to organize training sessions accordingly."*

Some teachers who are part of the CAPTIC will specialize in a certain type of techno-pedagogical tools in order to know their work better and learn at the same time as the students.

From the perspective of CAPTIC, peer-to-peer learning is an opportunity to engage teachers and motivate them to learn how to use new technologies. Furthermore, it is an opportunity to work with people who have the same tasks and goals to accomplish.

On the other hand, working with colleagues seems easier for teachers because they feel more relaxed and confident with their peers.

The role of the school head in CAPTIC is to believe in the community of practice, to work with all the people who are part of it, and to provide the means, economic, human and material, necessary for the proper functioning of CAPTIC.

> *"(…) one of the very important aspects as a headteacher is to give a vision, to give the mission and the main orientations of the organization,*

and to support it with financial, material and human resources, so that this can be achieved. So, it is to believe in it and to take the necessary actions." - Steve Gignac, Director of Studies.

6.5.5 Resources Dedicated to CAPTIC

To meet the requirements of CAPTIC activities, meetings were held in classrooms to work collaboratively and discuss learning experiences (Profweb,2018). Space was set aside to facilitate the holding of the CAPTIC meetings. In addition, the CÉGEP has various classrooms organized so that collaborative work can be done during the various classroom experiences. Multimedia rooms are also used for regular learning activities.

Figure 6.1: CAPTIC meeting room

Figure 6.2: Experimental room for collaborative work

In addition to the various classrooms that make up the facilities, CAPTIC has a large database that records the activities to be carried out or already carried out, requests from teachers and the names of participants. Thanks to this, they are able to establish annual reviews so that the evaluation of practices and work objectives remains clear to all its members. This data is useful for governance, as it can assess the demand for this type of service.

6.5.6 Benefits of CAPTIC for Cégep de La Pocatière

The CAPTIC is a laboratory for experimentation, a kind of research and development department for the integration of digital technology in education, a means of pedagogical innovation. It is made up of teachers in action who evaluate, when faced with a particular pedagogical need, the digital response to facilitate learning. The teacher's experience, their understanding of classroom dynamics and the difficulties related to certain types of learning are an asset in promoting the use of new digital tools or new learning contexts. Above all, teachers are given time to experiment while giving access to this skill development to other colleagues who have less time.

> *"(…) teachers often have a lot of ideas, a lot of projects they want to do, but they tell us they don't have enough time, 'I have too many classes to teach, so I don't have time to develop. So, by freeing up people and putting them in CAPTIC, we make sure that at least one of those people will have time to develop new digital skills and, even better, they can then transfer the knowledge to their colleagues." –*
> *A teacher from CAPTIC*

It is also important to mention that there are teachers in CAPTIC who do a lot in terms of innovation with their digital skills and therefore, it gives a space for teachers to effectively export their potential. This aspect is an added value since it allows for the recognition of the potential of some teachers and ensures a certain valorization of the staff.

The composition of the CEGEP CAPTIC changes according to the needs and the emergence of new digital tools, so there are always new members arriving. The educational consultant ensures continuity. Very often teachers who are consumers of CAPTIC services also become new members. This variation in projects makes it possible to better respond to the interests of all teachers.

> *" This is another little peculiarity. Obviously, when you choose people to be in CAPTIC, you make sure they have good digital skills. So, it's developed over the years. But we also try to vary, in other words, we don't always choose the same people, because we want to have different projects because people have different interests." - Annie Fortin, Assistant Director of Studies - Teaching Support.*

Teachers are very happy to have such a community of practice within their institution, because it is a structure that allows them to develop their skills, especially digital skills. At the same time, CAPTIC gives them the opportunity to supplement their courses with innovative elements, thanks to digital technology, which also allows them to save time that can be used for teaching and working with their students.

6.5.7 The Limits of the CAPTIC

A first challenge for CAPTIC is its outreach. The number of teachers who participate in its activities is variable and during certain periods of the year not very high. It should be noted that the teachers who attend CAPTIC are often teachers who would innovate with or without this centre. Also, different strategies must always be found to increase the motivation of other teachers to come

and get involved in the activities of this community of practice. Another challenge is to mobilize teachers in the training surrounding the use of new technologies.

> *"(…) are busy, they are involved in several committees, they have quite considerable tasks to complete (…)" - Steve Gignac, Director Studies*

On the other hand, there is ambivalence in the attitudes of teachers: a certain openness towards CAPTIC and a desire to learn, but also, on the other hand, closure and frustration due to professional obligations limiting participation in CAPTIC activities within the frustration causing institution.

Another limitation or barrier to the operation of CAPTIC is the financial aspect. When we talk about new technologies, we always think about the large budgets that are necessary for the operation of a community of practice that uses digital technology (especially for the acquisition of technological tools).

> *"Quickly, the limit I see is the number of teachers whose participation we can support. So, having more financial means would allow us to have more teachers participating in CAPTIC." - Steve Gignac, Director of Studies.*

CHAPTER 7: ANALYSIS OF RESULTS

At the end of this data collection and analysis of our theoretical considerations, we were able to draw some thoughts on this type of peer learning mechanism in a community of practice logic to include digital technology within an institution. The pooling of expertise acquired by peers, a strategy advocated by the Quebec government's DAP, is an alternative to consider.

CAPTIC can illustrate the contributions that a community of practice and learning, both face-to-face and virtual, can make to the professional development of teachers, principals, and trainee teachers. CAPTIC provides a space for reflection, interaction and development of innovative proposals not only in the use of new technologies, but also in training among colleagues.

Nevertheless, the relevance of the contribution of this type of community of practice will depend, on the stewardship and leadership assumed within this group as well as on the support of governance. The stakeholders within the governance structure must develop a vision and actions that legitimize the role of a community of practice such as CAPTIC in the development of digital, technological or pedagogical skills. These initiatives must be part of the institutional action plan. It seems important that all members of an institution be able to know the institutional orientations in terms of digital inclusion. It is also important to stress the importance of the institution's community of practice and to ensure its vitality by encouraging teachers to use this institutional mechanism. This role of promoting collaborative work or peer learning must also be supported by concrete measures to facilitate the work of the members of the community of practice, for example, identifying training needs, freeing up working time, keeping up with technological developments, etc. Only then will a community of practice no longer be a burden, but offer a real opportunity to share knowledge and improve or develop new skills.

As for teachers, this development of digital skills through the support of colleagues can more easily take place in a framework of trust and mutual understanding that facilitates the integration and adaptation of learning. However, mechanisms within the governance must be provided for so that the community of practice does not proceed from an insider's logic, in other words, that it is accessible only to a small number of teachers within the institution or, even worse, that these activities only meet the needs of insiders. It is necessary to ensure the greatest possible exposure

to all members of the institution if it is to become an in-service training device. Dissemination activities or tools for the general public should be considered. The leader of the community of practice must be vigilant to ensure that this outreach is carried out throughout the institution and make it a constant objective in the organization of its work.

The autonomy of members such as that observed among those in CAPTIC, a frequency of meetings to foster a sense of belonging and sharing, a community and public workspace, a collaborative way of working, and access to an appropriate environment are inherent characteristics of a community of practice such as that of CAPTIC, which is a kind of autonomous entity with a defined mandate and potential for creativity. As such, communities of practice invite collective ownership of the institution's objectives supported by shared governance mechanisms. In the case of the integration of digital technology into learning, this responsibility rests more on the front-line players, the teachers. CAPTIC seems to be an appropriate support measure to facilitate their task.

To sum up, this case analysis highlights many of the theoretical aspects discussed in the previous chapters. It is also clear that communities of practice and peer learning require clear leadership and direction within the governance structure. These governance mechanisms must also be known and generate respect. To ensure its vitality, the community of practice needs to disseminate its actions and results. Finally, all of this requires investment by the stakeholders and resources that allow these communities not only to be born, but also to grow, develop and be productive. As authors such as Cabero Amenara (2006) point out, learning communities are living communities that die if they are not nurtured with new ideas, projects and professionals. These ideas, this vision of opportunities to be legitimate and accompanied by resources must ultimately be embedded and supported by governance in a form of strategic planning such as action plans.

CONCLUSION

This work highlights the contribution of communities of practice towards facilitating digital inclusion. It represents an interesting asset for any organization, whether it is a professional organization, a company, a political organization, or an educational institution (as is the case in this study). Communities of practice can be a vector for organizational development. Despite their limitations (which we mentioned in the theoretical part of this study), communities of practice in schools facilitate exchanges between members, contribute to their personal and professional development, enable the exchange of good practice and can be a catalyst for innovative projects.

In order to bring about a change in practices, all stakeholders within an institution are called upon. However, the governance structure and the nature of management play a decisive role in the implementation of change. A shared mode of governance and a more democratic leadership supported by consultative practices will ensure better adherence to the desired orientations and measures as long as the resources allocated to ensure change are available.

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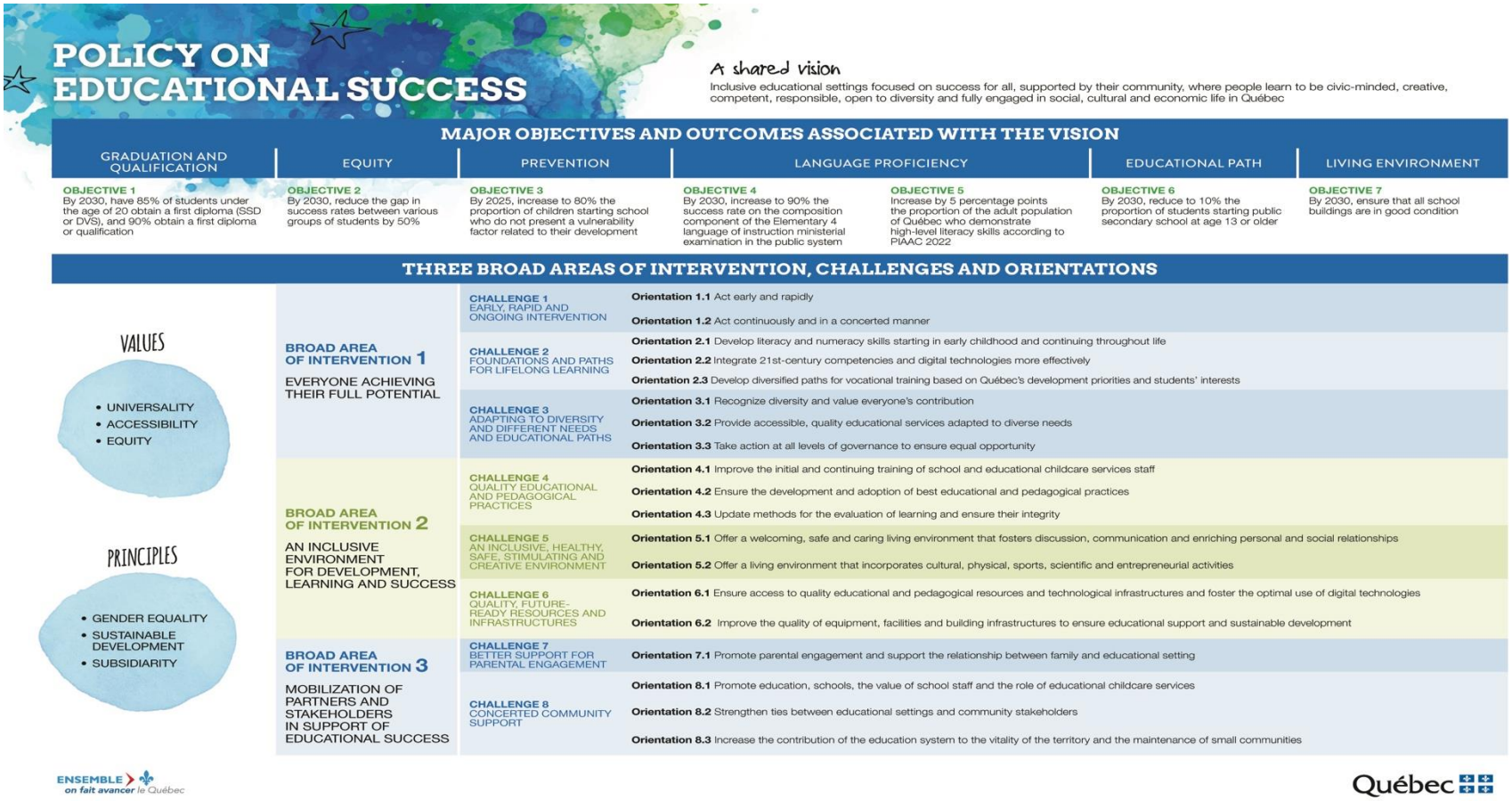
ANNEXES

ANNEX 1: POLICY ON EDUCATIONAL SUCCESS



ANNEX 2: READING AND UNDERSTANDING QUEBEC'S DIGITAL ACTION PLAN

Reading and understanding

the Digital Agenda

Quebec

Under the guidance of Michaël Bourgatte

This summary report of *Plan d'action numérique en éducation et en enseignement supérieur* set up by the Quebec government in 2018 was carried out by 20 students (whose names appear at the bottom of the page) enrolled in the *Master 2 Métiers de l'Enseignement, de l'Éducation et de la Formation (MEEF)* at the *Institut Supérieur de Pédagogie (ISP)*, Faculty of Education of the *Institut Catholique de Paris* as part of a research seminar. The objective of this work was to discover the political action programme set up in Quebec around digital technology education and to compare it with the initiatives taken in France. The complexity and richness of the document led the students to propose a synthetic version of it to allow its distribution.

The following individuals participated in this summary report:

CLAIRE ALAIX, CÉLINE CASTILLE, LORRAINE DE GOURCY, JULIA DEJEAN, BRIGITTE DOST, CONSTANCE FARGES, LUDOVIC FOURNY, CARMEN GUERRERO, SUSANNE HEUSSER, CASSANDRE JEANNIN-NALTET, MATHILDE KHAMPHANNASING, MARIE KREBS, SOPHIE LIOTTET, CAMILLE MARTINOT-LAGARDE, QUITTERIE RIOU, AGATHE SAULNIER DE PRAINGY, KHADIJA SINACEUR, CORALIE STUMPF, MARIE TARRIDE-MOUREU, STÉPHANIE TRIDON

This work was led by MICHAËL BOURGATTE, TEACHER-RESEARCHER AT ISP, FACULTY OF EDUCATION.

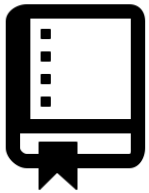
JOSELIE DONINION, ADMINISTRATIVE MANAGER, ACCOMPANIED THE PRODUCTION OF THIS DOCUMENT.

AT *ISP*, FACULTY OF EDUCATION.

ORIENTATION 1

SUPPORT THE DEVELOPMENT OF THE DIGITAL SKILLS OF YOUNG PEOPLE AND ADULTS

Measure 1



ESTABLISH A DIGITAL SKILLS REFERENCE GUIDE THAT IS AS COMPREHENSIVE AS POSSIBLE.

Measure 2

INCREASE THE USE OF DIGITAL TOOLS FOR TEACHING AND LEARNING PURPOSES BY 2020–2021.

Measure 3

SET UP REGIONAL HUBS TO PROMOTE COMMUNICATION BETWEEN ACADEMIC INSTITUTIONS, INITIATIVE-TAKING, ACCESSIBILITY TO HIGHER EDUCATION AND STUDENT SUCCESS IN THE CUTTING-EDGE AREAS.

Measure 4

PROMOTE THE INTEGRATION OF DIGITAL TECHNOLOGIES IN PEDAGOGICAL PRACTICES.

Measure 6

STRENGTHEN NETWORKING AMONG INSTITUTIONS TO DEVELOP STUDENTS' DIGITAL SKILLS.

Measure 7

ACCOMPANY THE TRAINING OF DIGITAL TECHNOLOGY MASTER USERS IN INSTITUTIONS.

Measure 8

TEACHING PROFESSIONALS WILL BE SENSITIZED, TRAINED, AND EQUIPPED WITH TOOLS, TO BRING ABOUT NEW PRACTICES, A *SINE QUA NON* CONDITION FOR ACHIEVING A REAL IMPACT ON LEARNERS.

Measure 9

INCREASE THE LEARNER'S AWARENESS WITH REGARDS TO THE OPPORTUNITIES, CHALLENGES AND IMPACTS OF DIGITAL USE. THIS REQUIRES A THOUGHTFUL USE OF DIGITAL TECHNOLOGY AND AN UNDERSTANDING OF THE CONSEQUENCES OF CERTAIN ACTIONS RELATED TO THE PROTECTION OF PRIVACY.

Measure 10

ACCELERATE THE DEVELOPMENT OF CONTINUING PROFESSIONAL EDUCATION FOR BUSINESSES.

ORIENTATION 2

MAKE USE OF DIGITAL TECHNOLOGIES TO ENHANCE TEACHING AND LEARNING PRACTICES

Measure 11

OPTIMIZE THE FUNDING AND DEVELOPMENT OF DIGITAL EDUCATIONAL RESOURCES (DERS) AND THEN MAKE THEM FREELY ACCESSIBLE FOR TEACHERS TO INTEGRATE INTO THEIR TEACHING PRACTICES.

Measure 12

FOSTER THE DEVELOPMENT OF EDUCATIONAL AND RESEARCH PROJECTS INCLUDING DIGITAL TECHNOLOGY THROUGH BUDGET INCREASES FOR HIGHER EDUCATION INSTITUTIONS.

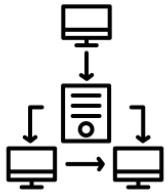
Measure 13

PROMOTE THE ESTABLISHMENT OF A NATIONAL ONLINE EVALUATION PLATFORM.

Measure 14

A GOVERNANCE STRUCTURE WITHIN THE MINISTRY WILL ENSURE THE RELEASE OF OPEN, RAW, RIGHTS-FREE DATA, ACCESSIBLE ON THE INTERNET FOR ALL CITIZENS, AND PROMOTE ITS USE THROUGH THE ORGANIZATION OF EDUCATIONAL HACKATHONS.

Measure 15



AN ONLINE PLATFORM OF DIGITAL EDUCATIONAL RESOURCES (DER) IS MADE AVAILABLE TO TEACHERS AND STUDENTS TO SHARE PEDAGOGICAL DATA FROM MULTIPLE EDUCATIONAL BACKGROUNDS.

Measure 16

THE NETWORKED SCHOOL PROJECT, INITIALLY CREATED TO BREAK THE ISOLATION OF CERTAIN SCHOOLS, IS BEING DEPLOYED AND STRENGTHENED THANKS TO DIGITAL TECHNOLOGY.

Measure 17

DEVELOP A DIGITAL BOOK LENDING PLATFORM (IN PARTNERSHIP WITH BIBLIOPRESTO, A NON-PROFIT ORGANIZATION) THAT WILL BE ACCESSIBLE DURING THE YEAR 2020–2021 TO ALL EDUCATIONAL INSTITUTIONS, STAFF AND STUDENTS.

Measure 18

SUPPORT THE IMPLEMENTATION OF A PLATFORM FOR RESOURCE SHARING BETWEEN LIBRARIES.

Measure 19

DEPLOY THE USE OF DISTANCE LEARNING (FAD – "FORMATION À DISTANCE") FOR A BETTER ADAPTATION TO THE PROFILES OF LEARNERS (SPORT-STUDY, HOSPITALIZATION, HOME SCHOOLING, ETC.), THE IMPLEMENTATION OF PEDAGOGICAL DIFFERENTIATION (EACH PERSON PROGRESSING AT THEIR OWN PACE) AND THE OFFER OF COURSES IN INSTITUTIONS THAT DO NOT HAVE THE RESOURCES TO OFFER THEM ON SITE.

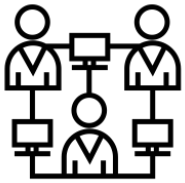
Measure 20

CREATE MASSIVELY OPEN AND FREELY ACCESSIBLE ONLINE COURSES (CLOM) TO MEET GROWING TRAINING NEEDS.

Measure 21

CREATE A VIRTUAL CAMPUS TO CONSOLIDATE DISTANCE LEARNING OFFER AT NATIONAL LEVEL.

Measure 22



DEVELOP DISTANCE LEARNING (FAD – "Formation à distance") TO REDUCE TERRITORIAL INEQUALITIES WITH REGARDS TO RESOURCES (MATERIAL AND FINANCIAL) AND THUS FOSTER COLLABORATION AND INNOVATION AMONG TEACHERS.

Orientation 3

CREATE AN ENVIRONMENT CONDUCIVE TO THE DEPLOYMENT OF DIGITAL TECHNOLOGIES IN THE EDUCATION SYSTEM

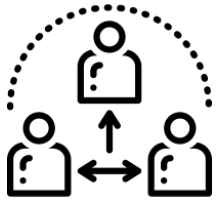
Measure 23

ALLOW BETTER TRACEABILITY OF STUDENTS' EDUCATIONAL CAREER AND STIMULATE EXCHANGES BETWEEN PARENTS, STUDENTS AND TEACHERS.

Measure 24

SUPPORT THE DEVELOPMENT OF ADMINISTRATIVE MANAGEMENT SOFTWARE.

Measure 25



SUPPORT INITIATIVES IN THE FIELD OF EDUCATIONAL TECHNOLOGIES IN ORDER TO INCREASE COMMUNICATION BETWEEN THE DIFFERENT STAKEHOLDERS IN EDUCATION.

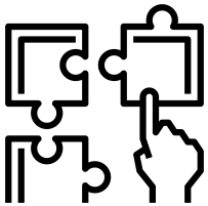
Measure 26

PROPOSE AN ACTION PLAN FOR THE DEPLOYMENT OF GOVERNANCE CONDUCIVE TO DIGITAL INCLUSION.

Measure 27

MAP QUEBEC'S EDUCATIONAL ECOSYSTEM AND SUPPORT COLLABORATION BETWEEN THE VARIOUS PARTNERS IN THIS SYSTEM.

Measure 28



ENCOURAGE COMPANIES AND STAKEHOLDERS IN THE EDUCATION SYSTEM TO INTERACT.

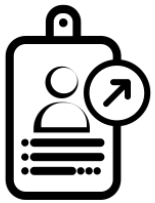
Measure 29

ALLOW THE FREE ACQUISITION OF DIGITAL EQUIPMENT.

Measure 30

PUT IN PLACE MEASURES (ACCESS TO TOOLS AND RESOURCES) TO MAKE ACCESS TO KNOWLEDGE EQUITABLE FOR ALL STUDENTS (INCLUDING THOSE WITH DISABILITIES OR LEARNING DIFFICULTIES).

Measure 31

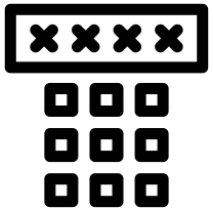


STRENGTHEN AND IMPROVE TECHNICAL SUPPORT FOR USERS OF DIGITAL DEVICES IN EDUCATIONAL INSTITUTIONS, INCLUDING THE HIRING OF ADDITIONAL STAFF, TRAINING OF SUCH STAFF AND DEVELOPMENT.

Measure 32

DEPLOY DIGITAL INFRASTRUCTURES TO MEET THE NEEDS OF THE EDUCATIONAL COMMUNITY.

Measure 33



ENSURE THE SECURITY OF INFORMATION CIRCULATING WITHIN EDUCATIONAL DIGITAL NETWORKS.

ANNEX 3: INTERVIEW QUESTIONNAIRE

Interview Questionnaire

A- Headteacher and teachers

1) Explain to me what CAPTIC is.
2) Describe how CAPTIC works.
3) What are CAPTIC's contributions to the CEGEP?
4) Do you find that there are limits to CAPTIC?
5) Will you change anything about this community of practice and peer learning?
6) How important is this peer learning?

B- Teachers (trainers or users)

7) What is the use of CAPTIC for you?
8) What is the role of teachers in CAPTIC?
9) What is your contribution to CAPTIC?
10) Describe a CAPTIC activity in which you have participated?
11) What was your view of digital technology before CAPTIC? And now, what is the view that you have?

C- Headteacher

12) What is the role of the headteacher in this community of practice?

ANNEX 4: MAKING VIDEOS

Video Production

Video presenting the CAPTIC

Presentation by Martin Bérubé, Educational Consultant at Cégep de La Pocatière and by the teachers involved in CAPTIC

Co-directed by Sébastien Balanger, Pedagogical Designer, Institut Supérieur de Pédagogie, Institut Catholique de Paris (ICP) André Loiselle and Ghislain Bouchard, Technician at the Cégep de La Pocatière.

https://youtu.be/u-3wyw5v704

Video presenting the governance structure for the integration of digital technology at the Cégep de La Pocatière

Co-directed by Sébastien Balanger, pedagogical designer, Institut Supérieur de Pédagogie, Institut Catholique de Paris (ICP)

https://youtu.be/EBdL79b3c-0

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