



Research paper

## Reflection on teaching action and student learning

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### ABSTRACT

Reflection on teaching practice has been recognized to improve teaching skills. However, teachers do not always know how to use it. This qualitative study [1][1] is aimed at better understanding how reflection can help transform teachers' views of their practice. Logbooks, videos and simple self-confrontations were tested. The reflection supported by the use of these tools, has led to a change in the way they view their teaching. Planning, activity variation, student characteristics, teacher-student relationship and classroom management have been identified as reflective practice outcomes connected to factors that can influence learning.

### 1. Introduction

Government bodies, namely the Ministère de l'Éducation (2001, 2020) and the Conseil supérieur de l'éducation (2000, 2004, 2014) and other organizations such as the Fédération des cégeps (2003) have in the past and continue to advocate reflective practice as part of teacher training in order to encourage student engagement and to foster teaching interactions that are conducive to learning. A number of university teaching program courses are made available to College of General and Vocational Education teachers, but they are not a requirement for obtaining a teaching position nor for pursuing a career at a CEGEP and hence many teachers do not have such training. In addition, at the teachers' behest, CEGEPs offer non-credit group training as part of professional development activities, for the purpose of keeping their disciplinary and pedagogical knowledge up to date. However, its content is not specifically tailored to the needs of health professions technical program teachers, but targets instead general teacher demands of technical, general education and pre-university programs (Lefebvre, 2016). As a result, training is lacking. It is therefore pertinent to develop reflective practice among teachers in this specific field in order to contribute to the improvement of their teaching competencies.

This research comes on the heels of two previous studies conducted in 2011 and 2016 which dealt with reflective practice and teaching skills development among novice CEGEP technical program teachers. This

study focuses specifically on teachers in the health professions technical programs and proposes a reflective tool set including the following tools: video, simple self-confrontation, a logbook and self-evaluation. To support their reflection process, a reflective practice development model (Lefebvre, 2016) is implemented in order to achieve a reflective practice that leads to a transformation of teaching practices. This model, organized around teaching-learning situations that elicit reflection, is designed to enable teachers to benefit from these situations by taking action to develop their teaching competencies.

The purpose of this research is to understand the factors relating to professional teaching competencies that according to the teachers facilitate or hinder learning through the use of reflective tools. The model is used to operationalize the reflective process.

#### 1.1. Reflective practice

It's important to note at the outset that albeit amply addressed in the literature, reflective practice is a polysemous concept whose interpretations are poorly distinguished (Beaupré, 2020; Gemme, 2019).

Reflective practice involves the use of mental processes (Balas-Chanel, A. 2014; Schön, 1983). It occurs when solving a problem or attempting to better understand a complex situation, and results in an awareness from which emerges a questioning of the act of teaching (De Champlain, 2013; Dewey, 1933; Lison, 2013).

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Reflective practice includes three stages: 1) reflection before action; 2) reflection in action; and 3) reflection on action. The first is related to planning the action (Lacroix, 2008). Schön (1983) distinguishes between reflection in action and reflection on action. Reflection in action is triggered by an error or an unexpected situation forcing the individual to temporarily pause and take a step back to become aware of and reflect on the unexpected event in order to readjust their action (Lacroix, 2008). Reflection in action is intuitive and requires an immediate response. Reflection on action takes place after the action. The teacher reflects without urgency on the situations they have experienced in class and evaluates the results of the actions taken, including their impact on student learning. Reflection on action is more systematic and involves retrospection that can stretch out in time (Lacroix, 2008).

In the context of this research, reflection on action consists in reflecting on the teacher’s teaching action. This process leads them to examine the elements that make up their teaching situation, regardless of whether it is problematic or not, and develop an understanding, as a result of which they are likely to change their teaching in order to improve it. The emerging new knowledge allows the teacher to develop intervention models of their own which contribute to their professional development. Teaching action includes the professional teaching competencies that teachers focus on when reflecting on their action.

The following graph (Fig. 1) illustrates the three stages of reflection.

### 1.2. Competency

A number of authors have described competency as a complex knowing-how-to-act that requires the mobilization and effective use of a set of resources (Leroux, 2010; Tardif, 2012) combining cognitive, affective and psychomotor skills (Leroux, 2010; Perrenoud, 2004). These resources include effective and recurrent knowledge, know-how and soft skills that are mobilized, integrated and transferred in a professional context (Jonnaert, 2002). Authors also concur that there are internal and external to the individual resources and that in order to be effective, they must be linked in a dynamic and operational manner. Bissonnette and Richard (2001) argue that competency results from choosing judiciously among these knowledge and skills.

According to the Ministère de l’Éducation du Québec (2001), competency is deployed in an actual professional context as part of the type of knowledge that is harnessed within professional action, it is placed on a continuum of complexity, is based on a set of resources and it is an intentional practice. It is manifested in a recurring manner and develops throughout an individual’s career. Based on this definition, for the purpose of this research, competency is understood as a complex knowing-how-to-act that requires the learner to be actively engaged in the construction of their learning.

Drawing on Le Boterf (2008), in professional teaching action, competency is also considered to harness a blend of pertinent resources including knowledge, know-how, and knowing-how-to-act and react. Knowledge and know-how are integrated into the action and come to life concretely through their implementation in a specific situation. Know-how is practical, concrete, empirical, experiential knowledge or knowledge learned “on the job,” i.e., knowledge in action acquired through trial and error. As a result, competency development continuously changes and evolves.

### 1.3. Reflective practice development model

The reflective practice development model (Lefebvre, 2016), inspired by Holborn, Wideen, and et Andrews (1992) and Mezirow (1981), is implemented in this research to help operationalize the participants’ reflective process in order to achieve a reflective practice that is transformative of their teaching practice (Fig. 2). This model, organized around teaching situations that elicit reflection and aim to empower teachers to use them to their advantage, promotes understanding, improvement and valuing of college teaching skills development.

Reflective practice takes the form of a set of reflective professional actions, which evolve continuously throughout a teacher’s career. Over time, the teacher experiences different situations that prompt reflection. Fig. 2 shows that reflective practice develops along a temporal continuum, whereby the teacher becomes aware of their experiences, which they analyze when reflecting on their actions. The teacher uses reflective thinking when looking back on their teaching performance. This conscious way of thinking leads them to resolve the particular situations they encounter. They subsequently transform their thinking into intelligent and reflective action in view of a future performance. Reflective thinking is a recurring process that allows teachers to examine their experiences in order to understand them and guide their actions in the future. This process leads the teacher to consider a new action from which the cycle of reflection begins again, not necessarily following a strict order. As illustrated in Fig. 2, the reflective approach, inspired by Holborn et al. (1992), is a four-stage cyclical process that fosters alternation between action and reflection.

This model invites teachers to reflect on their teaching practice by encouraging them to become aware of their actions, to analyze them, to try to explain events and to plan a new enhanced action in order to improve their practice (Lefebvre, 2016). In this manner, teachers have experiences that they come to own and change their actions in order to improve the various teaching situations. This approach involves reflection on the factors that may facilitate or hinder learning. Developing reflective practice contributes to the quality of teaching and supports learning.

## 2. Methodology

### 2.1. Study design

This qualitative descriptive research (Karsenti, T. and Savoie-Zacj, L., 2018) was aimed at better understanding health sciences CEGEP teachers’ reflection on their teaching actions in order to document the facilitating factors and obstacles to learning that the participating teachers brought up during the reflection. To this end, a reflective process involving a set of tools was proposed to participants, followed by a focus group.

### 2.2. Population and sample

Target participants were invited to take part in the study at the outset of the project because the departments where they teach had been contacted in the context of two previous studies, in 2011 and 2016, and the teachers had expressed interest in participating. The sampling

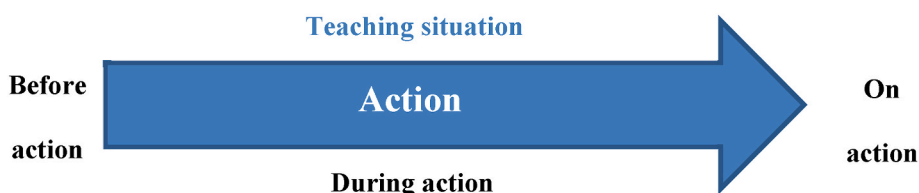


Fig. 1. Three stages of reflection.



Fig. 2. Reflective practice development model (Lefebvre, 2016).

strategy led to the selection of all health department teachers who volunteered. Five female teachers accepted the invitation. They had a full-time contract, non-tenured, or tenured positions. Their age ranged between 47 and 55. Two of them have denturology college diplomas, one a college diploma in visual orthosis techniques, one in dental prosthesis and one in nursing. One of the participants also has a bachelor’s degree in architecture and a diploma of graduate specialized studies in college teaching, one a master’s in Educational Technology, one in College Teaching and one in Education. They had between 6 and 33 years of professional experience in their field and between 5 and 25 years of teaching experience. They are members of their professional order, which is an employment requirement for teaching the disciplines mentioned above.

Table 1 presents the characteristics of the participants.

2.3. Data collection

The data collection was carried out by means of a reflective tool set, on the one hand, and a focus group on the other. The reflective tool set is defined as a structured organization of several tools to help derive learning from the act of teaching (Beckers, 2002). The reflective tools

Table 1 Characteristics of the participants.

Gender	Ages	Professionnelle diploma	Professionnal experience	Teaching experience
Women	47	Denturology	10	17
Women	55	Denturology	32	20
Women	48	Dental prosthesis	12	5
Women	55	Visual orthosis	33	20
Women	52	Nursing	6	25

Table 2 Professional competencies for teachers.

COMPETENCIES	
C1	To act as a professional who is inheritor, critic and interpreter of knowledge or culture when teaching students;
C2	To communicate clearly in the language of instruction, both orally and in writing, using correct grammar, in various contexts related to teaching;
C3	To develop teaching/learning situations that are appropriate to the students concerned and the subject content with a view to developing the competencies targeted in the programs of study;
C4	To pilot teaching/learning situations that are appropriate to the students concerned and to the subject content with a view to developing the competencies targeted in the programs of study;
C5	To evaluate student progress in learning the subject content and mastering the related competencies;
C6	To plan, organize and supervise a class in such a way as to promote students’ learning and social development;
C7	To adapt his or her teaching to the needs and characteristics of students with learning disabilities, social maladjustments or handicaps;
C8	To integrate information and communications technologies (ICT) in the preparation and delivery of teaching/learning activities and for instructional management and professional development purposes;
C10	To cooperate with members of the teaching team in carrying out tasks involving the development and evaluation of the competencies targeted in the programs of study, taking into account the students concerned;
C11	To engage in professional development individually and with others;
C12	To demonstrate ethical and responsible professional behaviour in the performance of his or her duties.

Reference: Gouvernement du Québec. (2001). *La formation à l’enseignement, les orientations, les compétences professionnelles*. Ministère de l’Éducation..

selected are recognized means of contributing to the development of reflective practice among teachers. The use of a blend of tools facilitates self-analysis, analysis, development, and regulation of teaching

(Lefebvre, 2016), in addition to promoting the operationalization of reflective practice. Video feedback consists of recording teaching activities with the aim of viewing and reviewing the performance as needed in order to deepen knowledge of the teacher's way of acting in order to improve their practice (Hébert & et Lafranchise, 2017; Tochon, 2002). The tool makes it possible to take a step back from the action, which allows for awareness and reflection. Simple self-confrontation, as Clot, Faïta, Fernandez, and et Sheller (2000) point out, encourages looking back on the action and discussing it with another person (Blondeau & et Nieuwenhoven, 2016). The logbook leads to a better understanding of teaching practice in addition to making teachers more aware of their teaching (De Cock, 2007; Lefebvre, 2013). It is combined with self-evaluation, whose pertinence for capturing the change that occurs in teaching practices as a result thereof is ascertained by several studies (Argyris & et Schön, 1978; Legault, 2004; Lefebvre, 2016; Oberg, 1992; Rouiller, 2005). It favours professional autonomy and promotes awareness.

A focus group was subsequently held with the participants. The discussion was audio recorded and transcribed verbatim. The principal researcher acted as a facilitator. She initiated the discussion with open-ended questions in order to glean information from participant reflections on their practice while using the reflective tool set, reflections in which they addressed their professional competencies. An interview guide, including open-ended questions, inspired by Chaubet et al. (2016) was developed.

#### 2.4. Data analysis methodology

The qualitative data were essentially obtained using the reflective tool set and the focus group discussion which was transcribed in its entirety to ensure better understanding. The transcripts were carefully read with a view to familiarization with the data (Fortin & et Gagnon, 2016). Data content was analyzed according to L'Écuyer's method (1990).

Table 2 presents the data collected were coded on the basis of the Quebec Ministry of Education Reference framework for professional competencies for teachers (2001). Although not specific to CEGEP teachers, this reference framework was chosen because other competency frameworks, those provided by Laliberté and et Dorais (1999) and the Conseil supérieur de l'éducation (2000) for example, have never been mandatorily implemented. Moreover, it is more detailed in terms of competency items, which facilitated its adaptation for the purpose of creating a coding grid. The competencies are presented in the following table.

It should be noted that we have not included competency nine, worded "To cooperate with school staff, parents, partners in the community and students in pursuing the educational objectives of the school," because it was deemed irrelevant to the college level.

#### 2.5. Ethical considerations

Two ethics certificates were obtained prior to data collection, one issued by the Université du Québec à Montréal (2925\_e\_2018) and the other by the collaborating CEGEP (CÉR-CÉM-2018-07).

#### 2.6. Criteria for methodological rigor

The methodological rigor criteria applied are credibility, transferability, and reliability (Karsenti & et Savoie-Zajc, 2018). The credibility criterion requires the use of varied data triangulation strategies. We have used several data collection tools (logbooks and self-reports, indirect observation through video, transcripts of individual video feedback, simple self-confrontation). A semi-structured interview was conducted with participants on their assessment of the tools. The transferability criterion is met by describing the context in which the project took place and the characteristics of the sample in terms of age,

professional experience and education level. This information can be obtained with other groups of teachers at the college or other levels of education. Reliability is demonstrated by the use of five data sources (logbook, self-evaluation, video feedback, simple self-confrontation and semi-structured appraisal interview) that ensure concordance of results.

#### 2.7. Research process

The participants used the tools of the proposed reflective tool set. At the outset of the project, they were paired with a peer (a teacher whose role was only to elicit the reflection and witness the professional development). The individuals of each dyad shared their teaching experiences and helped one another to reflect on their practice and find solutions to any teaching problems they encountered. Although the reflective tool set includes all the information necessary for autonomous use, members of the research team, including the principal researcher, provided a 2-h-long training session to participants on how to use the tools.

Participants were invited to take time at the start of the term to develop their classroom atmosphere before they began to use the reflective tool set. They were asked to complete a logbook combined with a self-evaluation form comprising a few questions to prompt reflection between the 5th and 10th weeks of the term. From the 5th week on, they filmed an initial teaching segment. Students decided if they wished to be filmed, for the purpose of which they had signed a consent form. After viewing the recording in dyads, at the time determined by the participants, the teacher whose performance was being examined, indicated an element that she spontaneously wished to change in her teaching practice as well as the means she was going to use in a future teaching performance to achieve this change. These verbal reflections were audio-recorded and made available to the researchers for analysis. The participants filmed a second teaching segment in which they implemented the changes planned. The two recordings were made between the 5th and 10th week of term and viewed together with the assisting peer in the course of a simple self-confrontation interview. Finally, at this interview, a third viewing session was planned during which the dyad watched the two videos in succession in order to highlight the changes that appeared in the second video.

A focus group on the use of tools to support reflection was conducted with all participants at the end of the experiment. This 90-min group discussion provided an opportunity to discuss after-action reflection, teaching competency development, and factors that may facilitate or hinder student learning.

The following figure (Fig. 3) illustrates the process and the data sources.

### 3. Results

The results presented focus on comments participants made in their reflections on their teaching practice in the time period when they used the reflective tool set. Their comments were considered in relationship to the professional competencies framework for teachers. The results also underscore the learning facilitators that emerged from the participants' reflections on their action and obstacles to learning which triggered the change in the way they viewed their teaching practice. Participants are quoted for the purpose of illustration.

#### 3.1. Factors linked to professional teaching skills that may facilitate or hinder learning

Facilitators and obstacles to learning are presented simultaneously for each competency, starting with the facilitating factors.

##### 3.1.1. Factors related to communication competency (C2)

Competency two prescribes appropriate use of language by teachers in order to support student learning and to make themselves well

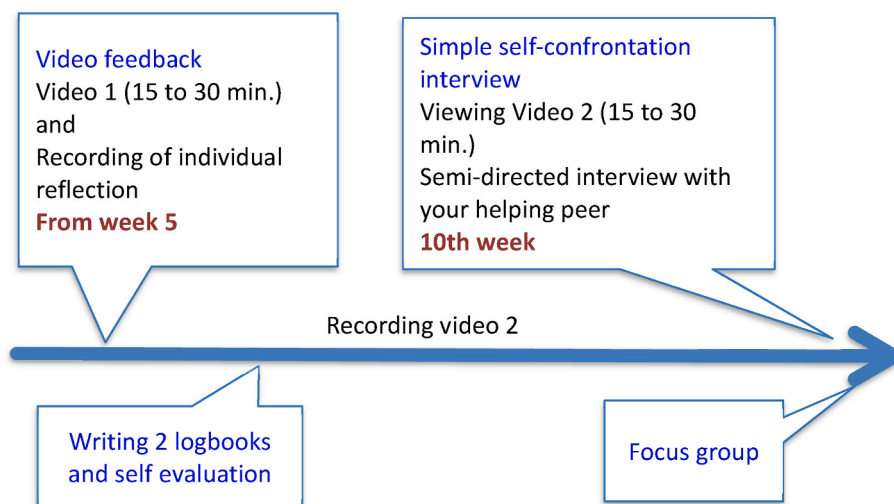


Fig. 3. Process and data sources.

understood by their interlocutors. In this research, participants used this competency when they thought about how to answer a question, for example. This awareness reveals that failing to sufficiently expand on the content taught is a factor that hinders learning. This creates discomfort in students who refrain from participating, which disrupts the classroom atmosphere. In this regard, teacher T1 mentioned during the focus group: “Here I’m answering a question. [...] I realize that the way I worded it is open to interpretation and not conducive to my student’s understanding.”

### 3.1.2. Factors related to planning competency (C3)

Competency three refers to the planning of meaningful situations that encourage students to engage in a process of knowledge construction and skills development as intended by the program of study. The teacher’s task is to design situations that are meaningful to the students within a socioconstructivist perspective that places them at the heart of their learning. In this research, the participants used this competency when reflecting on their planning. They mentioned factors that are likely to facilitate student learning such as the positive effect on consolidating learning and improved understanding of course content, in addition to creating a climate that is conducive to learning. For example, T1 commented in her logbook: “When I compare to now, I can see that I’ve learned quickly, I know how long it takes each time I address new content and I finish 5 min early. Before, I didn’t have time to ask all the questions on *Socrative*® (online formative tool for designing questionnaires). So it’s less stressful. I’m able to judge how long the activity is going to take and I’m not always pressed for time anymore, because I realize that good planning contributes to lowering stress and has a positive impact on the classroom atmosphere.” According to the same teacher, she said during the simple self-confrontation interview, “I regularly find that I plan questions in advance, I write them down in my plan when preparing my lesson and this helps me a lot to create an atmosphere that is conducive to learning because it’s dynamic, it holds attention.” T2 realized and mentioned in the logbook: “For next year, I am thinking of delaying exam one to week six so I can teach textures in week five before spring break. This will make their research easier by giving them more time.” This statement illustrates the positive effect that this change based on her recent experience will have on macro-planning. On the other hand, teachers sometimes find that adverse effects on learning are a result of wasted time or poor planning of material that keeps students waiting: “At one point, a student realized the reason why I was struggling. It was because the computers had been moved [...]. On top of that, when I came in, all the wires were unplugged. Nothing was working” (T1, simple self-confrontation interview). This

teacher became aware that an inadequate environment was an obstacle to student learning. This realization further encourages to plan changes to the environment. In her account, T3 stated during the simple self-confrontation interview: “The course used to be in lecture form before. This term we put the theory on the *MOODLE* platform® (online learning platform) and we do the exercises in the 2-h lab associated with the theory course. During lab time, the students ask me to go over the material when the goal was to do exercises and let them get some hands-on experience after reading and studying the theory. This change I made to my planning didn’t seem to have a positive impact on the students. Instead of imposing it, I could have surveyed the students beforehand to make sure it would achieve the outcome I intended. They didn’t feel assisted and, as a result, they were afraid they wouldn’t grasp the theory.”

### 3.1.3. Factors related to guiding student learning (C4)

This competency refers to the implementation of teaching situations to guide students in their learning. The teacher promotes engagement and varies the means at their disposal to support students’ motivation and development in line with the objectives of the program of study. The teacher considers the students’ characteristics and provides adequate support in their learning process by favouring cooperative activities. In our research, the participants used this competency when they reflected, for example, on the means put in place to ensure consolidation of learning and to promote understanding of the subject matter. On the one hand, one factor that can facilitate learning is supervision and support regarding the material to learn. As T1 says during the focus group: “I was doing a review of last week. I was going to go over all the important elements, things they should remember. When I do reviews, it’s because these are the important concepts.”

The teacher realized that creating and implementing fun activities to review material motivates students and fosters consolidation of learning by making students active and stimulating learner-teacher interactions. For example, T2 recounted during the simple self-confrontation interview: “In one of my 3-h classes, I teach theoretical concepts in very interactive ways. Students love it because I do it in the form of a game. Then we move on to practice and there, you might have seen in the library, we’re having an exhibition and we’re finishing up the projects. Visitors can vote on the projects and there are three prizes to win. So, they really worked hard. In this course, my strategy’s always the shift theory-practice-theory and that seems to promote retention and application.”

### 3.1.4. Factors related to the classroom management competency (C6)

Competency six relates to planning, organizing and supervising the classroom, i.e. classroom management. Classroom management involves numerous aspects of group life, such as the physical environment, use of material, application of and compliance with safety, health and hygiene rules, use of equipment in the laboratory or workshop, and respect for classmates and anyone present in the environment. These elements contribute to maintaining an atmosphere conducive to learning. In this regard, T2 brought up a learning facilitator during the video feedback: “Throughout the teaching activity, the classroom atmosphere was really good. Even humor was present to better assimilate concepts. The atmosphere was rigorous but stress-free. We had the lab space we needed to do the activities planned with ease. There was an atmosphere of respect. Even the use of tools was done according to the rules given at the beginning of the session.”

However, one teacher reported a constraint in terms of group organization that resulted in a loss of attention. In relation to time management, T1 said during the simple self-confrontation interview: “I started the class late because the computer mouse was going sideways, I was unable to direct it. One student realized that the screens were reversed. I had to move the screens around and finally my technical problems were resolved. But, the students kept talking, even after I started my class. I was really thrown off by the fact that someone had done this and I was disappointed by the waste of time it caused. I was worried that I might lose the group’s attention and not be able to get the class back on track. They were out of control.”

### 3.1.5. Factors related to the competency of using ICT for educational purposes (C8)

The use of ICT concerns the potential and possibilities that computer tools provide for the development of new knowledge. Technologies contribute to enhancing critical thinking required in discerning their positive aspects and limitations in order to use them judiciously and reflectively. It behooves the teacher to perceive that this is a valuable means of updating knowledge, working with other teachers and supporting professional actions. In this sense, T4 brought it up as a facilitator of learning during the video feedback: “Student participation was good for the professional situations that I put online. This prompted them to ask me very pertinent questions about the theory afterwards. The learners were active, the atmosphere was conducive to learning, because students appreciate technology and using technology motivates them.” T2 underscored the positive contribution of technologies in her field during the simple self-confrontation interview: “Today, they were free to play with the software. They didn’t have any particular guidelines. In our next class, I’m going to show them how to design an object. I’m going to give them the proper guidelines so they can realize that you can do the simplest things and you can also make much more complex creations. They won’t believe their eyes!”

However, some competency-related factors can also hinder learning, as illustrated by T1 during the simple self-confrontation interview: “The course started badly, because I had a problem with the computer, I had to stop the recording and start again once the problem was solved, which led to a multitude of problems afterwards, technology and teaching-wise. I was completely shaken up. Sometimes technology can help learning, but when it doesn’t work, it’s really disappointing. I must say I’m not very confident when it comes to my technological skills, so this can really affect me and make me lose momentum. My frustration at not being able to fix the problem showed on my face and every time I tried it didn’t work ... I felt disheartened to have to teach my class without a visual after so much time spent on creating my teaching material.”

### 3.1.6. Factors related to the competency concerning the individual and collective approach to professional development (C11)

Professional development competency requires teachers to clarify their educational and teaching values and to gradually develop their professional identity. They need to assiduously assess their

competencies and use the means they have to develop them in order to keep pace with a continuously evolving profession. These means can be formal training, i.e., taking courses, or informal learning, discussions with colleagues about their pedagogical and didactic choices. They must develop the habit of reflecting on their practice in order to draw lessons from it and use what they have learned to improve their teaching action. T1, during the simple self-confrontation interview, reported a learning facilitator that is connected with this competency: “Next fall, I plan to reduce the content of my neurology course and have my colleagues read my course notes so that they can guide me if necessary.” This reflection on her practice illustrates a willingness to consult and share her thoughts with her colleagues in order to improve her course. This has a positive impact on students’ learning, who benefit from the input of other program experts into the teaching material with a potential to improve their understanding of the content. The spinoff strengthening of the program approach is another element. For example, T2 stated during the simple self-confrontation interview and the focus group that the use of video as part of her participation in our research has led her to want to film herself more regularly in order to analyze what she does in class: “I was thinking that the next time I film myself, first I’m going to do a demonstration for an exercise and then get the students to repeat the demonstration. But, I’ll “zoom out” so I can film the whole class. That way I’ll be able to see all of the activity that’s going on in my class. I’ll see myself as well as the students’ work. I’ll also be able to see my movements, the number of times I interact with them. I feel like turning the camera on and letting it film when I’m not there. Then I’d see myself come in and I’d be able to see how we interact.”

The use of video as a tool for assessing one’s skills and becoming aware of one’s strengths and areas for improvement has proven to be a facilitator of learning. T4 concurred during the simple self-confrontation interview and the focus group: “I’m really impressed with being able to see how I act and behave, both physically and in terms of my attentiveness to students. I can also see if and how they interact. I find it very instructive. I already have ideas on how to tweak my actions for my next class. I’ll start with a theory portion, at least a short feedback, and then do a lively activity, even physically.”

T5 said during the simple self-confrontation interview and the focus group: “I’d like to work more on the first part of this class, the part where they had to practice on their own. They’re always on their own. It’s true that in my field we work alone. It must be said that as a teacher, you also work alone in a way. The classroom is full of students, you’re part of a department, but most of the time you work alone. But I think that to improve your performance, you need access to others. I draw a parallel between my field and teaching. I think that next year I’m going to get students to work in groups. Because when it’s different, when you’re next to someone, and you see them doing the thing, you know what you need to do, you can be in copycat mode and it improves your skills. Plus, it’s crazy, but in my field, you have to learn to copy well in order to innovate one day. I tell them every time, this is the only class where they’re allowed to copy (laughs)!“

Participating teachers mentioned no obstacles to learning in relation to this competency.

## 3.2. Perspective on facilitators and obstacles to learning

During the focus group, the participants cited elements of their teaching performance that can be either facilitators or obstacles to learning. All participants, even those who were at the end of their careers, proudly emphasized their positive teaching performance, in particular their oral communication skills. For example, T1 said, “I see the progress I’ve made and being at the end of my career, I get confirmation that I am putting in practice teaching skills. I can see that I’m doing a good job, what I give, and that my oral communication is very clear. My students understand when I teach.” T2’s commented: “I feel that the course is well put together. I tell you, when I saw myself in the video, at first I thought it wasn’t me, because I didn’t think I was that

stiff. Besides, my peer assistant said to me ‘Oh you are very precise, your pronunciation is perfect, it’s good.’ I told him no, I kept reviewing it throughout the term. And I was able to observe that working on my communication completely changed the effect of my teaching on students.” In addition, ICTs impact learning and some teachers had hoped to see their students become more independent thanks to them: “I want them to work independently with the ICT material, but instead I answered the students’ questions ... It wasn’t a good idea. I could have made them go and look for the information.” (T4) “I helped the students to become more independent, so as a teacher, I too went the extra mile to support my students.” (T5).

Participants also shared their views on the issue of problem-solving. They mentioned minor aspects to work on and expressed satisfaction with their teaching performance overall. However, some of them had more to say on classroom management: “I could have planned to arrive even earlier to open all the windows on the computer and have a technician come in to fix the technical problem while I did an overview of last week’s material. Then, I could have started with theory and changed the order of class activities until the problem was solved, instead of letting the students down with these issues.” (T1) She also felt she could improve the way she communicated content: “some students had commented that the content was too heavy, that there was no common thread and that sometimes it wasn’t clear. I think they were right. But, I think, this probably happens because I know the material too well. How come I find everything crystal clear, everything’s perfect, and in the end I discover it’s not.”

Other participants focused their comments on teaching strategies needing improvement, which relates to the competency that has to do with guidance. Teachers noted that most of the time, changing teaching strategies was beneficial to student learning. Planning was also mentioned. They reflected on the sequencing of activities to ensure that students achieved their learning objectives. Some participants realized the benefits of solutions they had implemented since the beginning of the term. For example, T2 said: “This reflection helped me to reorganize classes and the result is extraordinary when you know that I had students who were struggling and now they manage to complete the task. They are all very happy to be doing well.” T4 stressed: “I realized that, honestly, we’ve come a long way. We’ve made a lot of changes, we’ve solved many problems to the student’s benefit using ICT tools. We still have a long way to go, but thanks to the video, we’re aware of it. Plus, students tell us that they really appreciate the changes we’ve made and that it helps them to do better.” T5 added: “I think the key is to continue to make them active, because it works and we’ve seen that it facilitates the students’ comprehension of the subject matter. In addition, they’re in control of their learning strategy while having the resource (the teacher) close at hand. It’s the student’s responsibility now, but the teacher has their back.” T4 concurs in relation to an ICT solution: “What surprised me is that, although this is 2019, students are good at the things they want to be good at. The tablet, social media, cell phones, etc. I thought using the platform would solve all the problems and would make life easier for them. On the screen, everything’s in color. People do not print out course notes anymore. You can see anatomy better on the screen. You do not get this in printed notes. Well, they printed everything out! One time I said to a student to go look something up on the course Moodle. He responded - I’ve got it, I’ve printed it all out. So he wasn’t using these valuable options the platform provides. And I thought I was archaic.”

Participants reported that they view their practice, things, people, and the profession, differently. The elements they stress are their overall positive teaching performance, oral communication and use of ICT. They are proud of being able to articulate content clearly and to use didactic means to facilitate learning. In this regard, T1 said: “I found that everything I used as teaching aids helped them to understand the material better and I find that rewarding. I did well. I was really happy with myself.” T2, on the other hand, illustrates the challenge that non-verbal communication poses to some teachers: “I didn’t smile once ... I was

very surprised to see how unfriendly I looked on the screen, I thought I looked extremely serious, it’s boring. If I were in their shoes, I’d find this person so boring, not motivating to learn with.” Others were most impressed with the improvements they made in relation to lesson planning. T2 explained: “I thought about it and realized that I was doing something that made their lives easier but eventually blocked them because I hadn’t given a real lecture, a traditional lecture.” T5 added, “Changing my way of doing things over the course of the term through my reflections made me realize some important things about my teaching and teaching skills. For example, I’m no longer in front of the class talking all the time. I manage my time better, and this frees up a lot of time to check what the students are doing in my class. They’re at it, cognitively, and sometimes even physically, active. I’m really happy with what I’ve been achieving and the effects on my students’ success.”

### 3.3. Summary of results

Table 3 provides an overview of results, presenting in descending order the degree of competency use calculated on the basis of all occurrences included in the data analysis (low=1/3 or less of occurrences, medium=between 1/3 and 2/3 of occurrences, high=more than 2/3 of occurrences), and summarizes the themes related to the factors and their effect on learning as perceived by the teachers.

## 4. Discussion

The elements considered are reflective practice and professional competencies relating to factors that may facilitate or hinder learning.

### 4.1. Reflective practice

The results show that reflective practice can foster a certain understanding of teaching practice as regards professional teaching competencies through teacher reflections on their teaching actions in the classroom, supported by the reflective tools proposed (Gareau, 2018). The teachers became aware of their teaching choices and preferred methods of promoting learning. It is evident that the teachers would not have been able to perceive and interpret the key elements of their teaching actions as they did without taking a step back, which the tools imposed (Lefebvre, 2013, 2016). According to their perception, they transformed their view of the factors that can facilitate or hinder student learning by using their prior interpretation as a stepping stone to the development of a new interpretation. The information they gleaned from reflecting on their teaching actions by means of the reflective tool set led them to analyze their previous teaching practice and served to steer their future action choices (Gareau, 2018; Gemme, 2019) with a view to improving their professional teaching competencies. In this manner, they contributed to the process of transforming the way they conceive of and practice the profession, allowing themselves the opportunity to question their teaching actions in light of their reflection thereon and new perspectives that are better differentiated and integrated in relationship to lived experience (Mezirow, 1998) and in relation to facilitators and obstacles to learning. Participants demonstrated openness in examining their teaching actions to better understand their practice in order to enhance their teaching, while accepting the transformational effect of this experience (Boutet, 2004). This openness is testimony to the achievement of professional maturing.

### 4.2. Professional competencies related to factors that may facilitate or hinder learning

The participants’ gaining awareness of factors that may facilitate or hinder learning and that relate to certain professional teaching competencies is noteworthy. The results of the analysis show that the majority of these factors stem primarily from acquired skills related to leadership, professional development, classroom management and planning. The

**Table 3**  
Professional teaching competencies used per theme related to factors and their effect on learning.

Competencies	Degree of use	Factor Themes	Effect on learning
4) Guidance	High	Supervision of learning Availability of resources Learner interests and characteristics	Consolidation of learning Understanding content Classroom atmosphere Feeling valued Motivation Participation
11) Professional development		Reflection and validation of practice Professional competencies (level of mastery) Self-confidence  Authentic professional situations	Classroom atmosphere Understanding the content  Links with the profession Learning activities Motivation
6) Classroom management		Time management Class functioning  Health and safety	Classroom atmosphere Motivation Understanding the content Teacher-student relationship
3) Planning		Time/content/environment management Organization of teaching-learning activities	Classroom atmosphere Supervision Delving deeper into the topic
8) ICT	Medium	Technological tools for learning purposes Classroom atmosphere Strengths and challenges Review activities/strategies	Motivation Interaction Consolidation of learning
10) School team 2) Communication	Low	Learners' interests  Oral communication  Varying stimuli	Better understanding of disciplinary concepts Teaching materials Classroom atmosphere Motivation
1) Profession 5) Evaluation 7) Learner characteristics 12) Ethics	Not used		

<sup>a</sup> Delete the table footnotes For complete competency wordings, see the 2nd paragraph of Section 2.4.

impacts on learning that stand out are those in the areas of consolidation of learning (Lévesque, 2002; Kortagen, 2001), understanding subject matter, self-confidence (Glee, 2008; Glina Proulx & al., 2012), motivation (Clark, 2007; Gareau, 2018), participation, classroom atmosphere (Boulard, 2022), learning activities, teacher-student relationship (Farell, 2014), supervision and deeper exploration of content. The factors that arise from ICT-related skills come second, and those connected to school as a team and communication come third. The outcomes are namely understanding subject matter, course material and motivation. The hypothesis put forward is that the proposed reflective tools encourage reflection after the teaching action and perhaps enable participants to gain insight into which factors facilitate or hinder learning based on their perception. Participants' preferred tools were those requiring the use of video (Lefebvre, 2016). Curiosity pushes them to use

video because it finally provides them an opportunity to see what they do on a daily basis as well as direct access to their practice. This promotes observation of events and their analysis (Reitano & et Sim, 2010; Viau-Guay & et Hamel, 2017) based on their previous teaching experiences.

In fact, participants' reaction to viewing their teaching performance with assistance from a peer is unanimous. What they most appreciated is the ability to share their practice with a peer (Goulet, Larue, & Alderson, 2016). They were eager to confirm, through the image, their perceptions of their performance, to observe that they were as good as they thought they were in relation to their personal ideal, and to become aware of the aspects of their teaching actions that they still needed to work on. Moreover, compared to novice teachers who after viewing draw validation of their teaching from finding themselves better than they thought they were (Lefebvre, 2013, 2016; Lemire, 1972), the seasoned teachers who took part in this research appreciated the video for the confirmation it provided of their perception of their skills and what they already thought. The participants in our research affirm that they now have a more accurate view of their professional skills and their potential impact on student learning. Finally, they emphasize the importance of sharing what they do with a peer to enrich their practice.

### 4.3. Limitations and biases

Some limitations of this research should be considered. Although short meetings, attended by all participants, were held to present the tool set, and although it was designed for independent use and includes explanatory texts, diagrams and examples of the various tools it comprises, the participants said that due to their heavy workload they did not necessarily take the time to read these instructions. In fact, they admitted that they were quick to use the video-based tools, often after the mid-term, because they were more concerned with witnessing their teaching actions and sharing what they discovered with a trusted peer. They assumed that these tools were more time efficient. They, and their students, also admitted that the logbook combined with the self-assessment seemed cumbersome and that they were put off by the task of writing (Tschopp, 2019) until they discovered that it was designed in the form of a questionnaire and that it turned out to be rather user-friendly. On the other hand, they pointed out that, like any person who is very passionate about and involved in their work, it is easy to find good reasons to postpone regular pausing for reflection on their practice (Lacroix, 2008). Using the reflective tool set requires a reasonable amount of time. It is simply a matter of deciding to allow oneself this time for reflection. One possible solution would be to create a "reflective club" (Jalilifar & Nattaq, 2013; Nault, 2005) as a professional development activity that could take place in part during pedagogical days or departmental activities. Moreover, it would be interesting in future research to have the participants work in pairs so that they have the opportunity to highlight the work of each other to see if their individual reflections have indeed been effective.

In addition, only women participated in the project. If there had been an equal number of men and women or if there had simply been a representation of both genders, the results might have been different. Also, the small number of participants can be a limit. Resuming the study with a greater number of data could make it possible to obtain a more accurate body of data. It would be valuable to repeat the process in a future research project with teachers of other technical programs at the college level including male representation. Moreover, an experiment with teachers in the health field at the secondary vocational education level in order to compare results would be of great interest.

### 5. Conclusion

The purpose of this research was to grasp the factors connected to professional teaching competencies that facilitate or hinder learning as perceived by teachers in the health field through reflective practice.



Correspondences were established between the comments of CEGEP teachers in the health field resulting from reflection on their teaching actions using reflective tools (video playback, simple self-confrontation, logbook combined with self-evaluation) and the reference framework for professional competencies for teachers. The results showed that reflective practice triggered the use of seven out of twelve professional teaching competencies. The factors related to these competencies are motivation, sense of being valued, the teacher-student relationship, participation, supervision, classroom atmosphere, consolidation of learning, course material to be learned by students, learning activities and teaching material. The focus group also revealed that the teachers are proud of their teaching performance. In addition, reflective practice contributes to a better understanding of their practice, which leads them to see differently the impact that their teaching actions can have on learning. This research contributes to show that the use of tools encourages and make the development of reflective practice more methodical in order to better understand the teaching practice. The participants emphasized the contribution of reflective tools requiring video by satisfying their curiosity, confirming their performance and providing an opportunity to discuss their professional practice with a peer in order to promote, according to their perception, the learning and success of their students.

After taking part in the project, the participants said they were convinced that their teaching performance can have an impact on students' learning. However, according to some of them, in the end, their participation in the research confirmed what they already thought, though not consciously, about their professional teaching competencies. The feedback provided by a person who is trustworthy in their eyes, the assisting peer, had a positive effect in ascertaining whether the teaching actions that were put in place were conducive to facilitating learning.

## Declaration of competing interest

No potential conflict of interest was reported by the author(s).

## Data availability

The authors are unable or have chosen not to specify which data has been used.

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