

Nicole Monney¹

Département des sciences de l'éducation
Université du Québec à Chicoutimi, Canada

Catherine Duquette²

Département des sciences de l'éducation
Université du Québec à Chicoutimi, Canada

Christine Couture³

Département des sciences de l'éducation
Université du Québec à Chicoutimi, Canada

PROMOTING INCLUSIVE EDUCATION PRACTICES IN ELEMENTARY SCHOOL THROUGH FORMATIVE ASSESSMENT

Abstract

Following the 2003 curricular reform, assessment in Quebec has been governed by three overarching values: justice, equality, and equity (MEQ, 2003). Those values find their origin in inclusive education, which promotes a competency-based assessment and the success of all students (Akkari and Barry, 2018). However, with the return to numerical results, research has shown that teachers still favoured a summative assessment approach thus failing to uphold the core values of the programme (Hadji, 2015; Issaieva and Crahay, 2010). Consequently, teachers' evaluation practices still classify students as "good" or "bad" depending on their results. How can this situation be modified? In order to find answers to this problem, collaborative research (Desgagné, 2001) with seven elementary school teachers was realized from 2016 to 2018. The results of the focus-groups identified avenues to develop a more inclusive form of assessment. This article offers a reflection on the importance of teachers' understanding of disciplinary epistemology as the key to gaining greater freedom in assessment practices and thus promoting a more inclusive form of assessment.

Keywords: assessment, assessment practices, inclusive assessment, inclusive education.

Introduction

1. Inclusive Education: Teaching and Assessment Practices

Education is considered a human right by numerous countries in the world (UNESCO, 2019). In the Canadian province of Quebec, *Le Conseil Supérieur de l'Éducation* published in 2017 a report in which it states that education should aim at including all children and support them whoever they are and whatever their needs be (Conseil supérieur de l'éducation, 2017). The overall objective is to ensure that the education system becomes more inclusive meaning that all children learn together in the same schools (UNICEF, 2017) as requested by UNESCO:

All students can access and fully participate in learning, supported by reasonable accommodation and teaching strategies tailored to meet their individual needs. The concept of inclusion is part of all aspects of school life and supported by culture and policies (UNESCO, 2019, p. 6).

In inclusive education, no child should be excluded and teachers should accommodate individual needs so that all have an equal chance to succeed. But, in reality, this intent is a challenge for teachers who work every day with increasingly diverse classrooms. This is particularly evident when teachers are tasked with assessing their students. Following the 2003

¹ Email: nicole1.monney@uqac.ca

² Email: catherine.duquette@uqac.ca

³ Email: christine.couture@uqac.ca

curricular reform, assessment in Quebec¹ has been governed by three overarching values: Justice, equality, and equity (MEQ, 2003). These values underline the right for a student to appeal any assessment which would appear unfair, to have equal opportunities to demonstrate their learning and to expect assessment practices that respect the differences found between students. These values find their origin in inclusive education and aim for a differentiated approach to assessment ensuring that all students might achieve their rightful educational success (Akkari & Barry, 2018). Since the 1960's, research in education has promoted a form of assessment that supports student by providing them with information on their learning progression (Scriven, 1967). The idea behind this is that assessment must, above all, collect information on students' learning progression in order to identify their strengths and weaknesses and adapt consequently the instruction offered. Students, thus informed, are able to regulate their own cognitive and metacognitive strategies (Allal & Mottier Lopez, 2007; Morrissette, 2009; Scallon, 1986). This type of assessment considers students' mistakes as an opportunity for them to better understand their difficulties and a way for teachers to better support their pupils. The marking scheme was conceived in a way that respected this orientation and students' report cards noted whether students had exceeded expectation, reached an appropriate level of understanding, were in the process of developing their understanding or had difficulty reaching the appropriate level of understanding.

However, this new assessment scheme was met with considerable resistance and critique from politicians, educators and parents, who wished for a more traditional evaluation form. The pressure was such that in 2011, the Ministry of Education of Quebec changed the framework of assessment so that teachers have now the obligation to provide a numeral grade to describe their students' learning and to formally communicate it in the provincial report card. Thus, although the curriculum is competency based and build on inclusive education, the Ministry of Education imposes a summative assessment approach that compares students' learning with preconceived levels of achievement (Hadji, 2015; Issaieva and Crahay, 2010). Consequently, teachers' evaluation practices still classify students as "good" or "bad" depending on their results. Teachers are required to evaluate their students' performance rather than assess their learning progression. In this context, it is important to differentiate what is meant by assessment and evaluation (Allal & Mottier Lopez, 2007; Black & Wiliam, 1998; Morrissette, 2009; Scallon, 1986). Evaluation means to focus on grades to judge students' achievement while assessment refers to the process of documenting students' work and using the empirical data collected to provide feedback on their learning progression. The function of evaluation is to certify the level of learning reached while the function of assessment is to improve learning (De Ketele, 2010). In inclusive education, assessment practices are more appropriate to observe the values of equality, justice and equity. Yet, is it possible, in a system that favors a summative approach, to develop assessment practices that aim at helping students, whatever their needs be, move forward in their schooling?

Developing teaching strategies that foster a more inclusive assessment model appears to be fundamental if we wish to improve learning for all children and ensure that children with disabilities have equal chances to become active citizens in their communities. If we want to work towards inclusion, we need to reassess our assessment practices.

This paper presents the results emerging from a collaborative research project (Desgagné, 1997) conducted with seven elementary school teachers. The aims of the project were to (1) identify potential assessment strategies allowing teachers to assess their students without resorting to examination and (2) to develop strategies to provide a more inclusive form of assessment.

¹ Quebec is a Canadian province. In Canada, Education fall within provincial jurisdiction and thus provinces all have unique education systems.

2. Review of Literature: Towards a Joint Model of Learning and Assessment

All children can achieve a learning objective if they know what the objective is (Stiggins, 2008). This paper focuses on a particular form of assessment, namely formative assessment. Assessment is part of a learning dynamic and provides information to adjust both teaching and learning (Laurier, 2014). The role of formative assessment is to support learning by providing regular feedback to the student on his or her progress (Black, 2016; De Ketele, 2010; Dirksen, 2013; Dunn & Mulvenon, 2009; Harlen, 2016; Scallon, 2008; Stiggins, 2009). The goal is to help students connect what they know with the new knowledge they are building (Scallon, 2008). Formative assessment is different from an evaluative approach because it doesn't assess learning at the end of a teaching sequence. Instead, it supports students' learning throughout the entire teaching sequence by enabling both teachers and students to identify the content that still needs to be mastered (Dunn & Mulvenon, 2009). Thus, formative assessment is conducted throughout the learning activities proposed in class (Black, 2016). Our research team has thus elaborated a theoretical model to explain the relationship between the planification of learning activities, the teaching activities and the role of formative assessment throughout this process. Figure 1 illustrates this model inspired by the available literature. The project has specifically focused on the teaching of history and science and thus, the teaching activities found in Figure 1 are representative of the pedagogical approaches favoured by both disciplines. 1 are representative of the pedagogical approaches favoured by both disciplines.

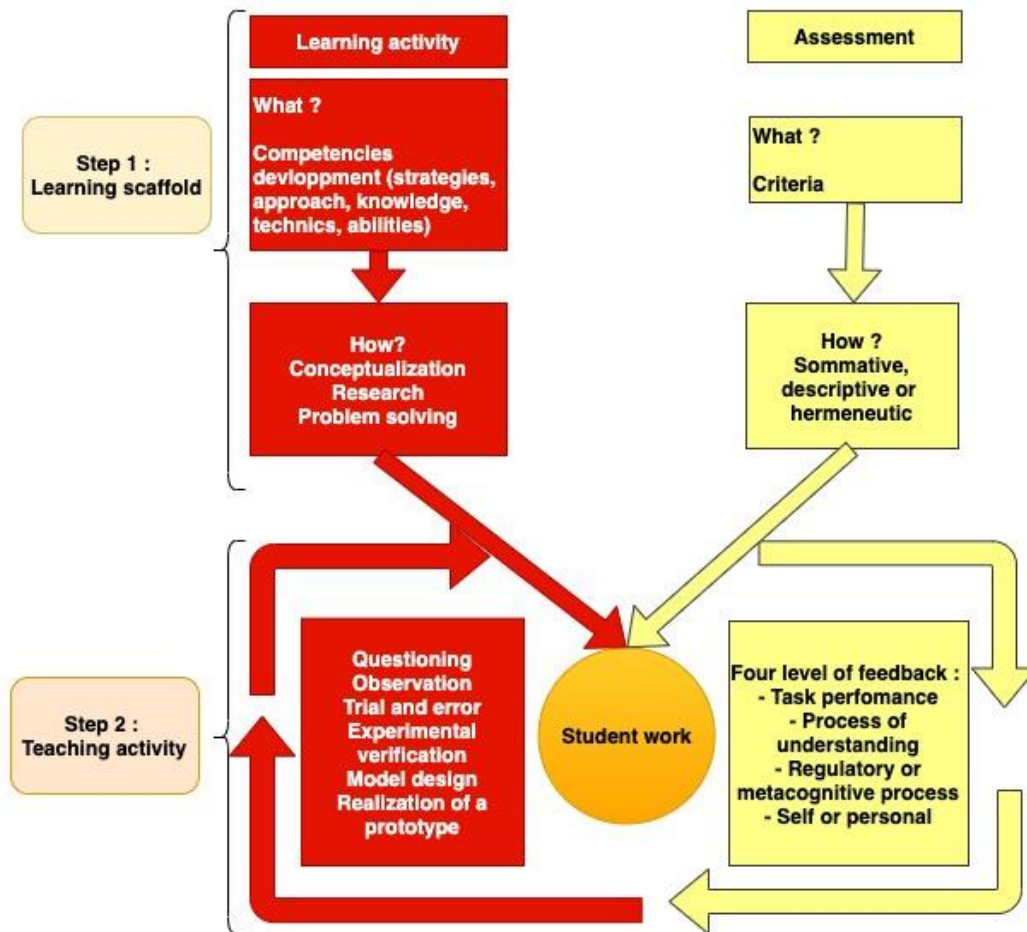


Figure 1: A Joint Model of Learning and Assessment

This model was used to analyse the data emerging from the collaborative research. Its design illustrates the relationship between learning and assessment and allows to deconstruct the steps in which teachers plan their lessons. The first step of this model is to scaffold the desired learning objectives by answering the following questions: what should be learned and assessed and how will students develop this new knowledge. By identifying the learning objectives related to the discipline taught, it is possible, at the same time, to identify the assessment criteria that will be used to support students in their learning (Smith, 2014; Stiggins, 2008). Content knowledge is prescribed by the Quebec curriculum (QEP) (MEQ, 2001), which focuses on the development of competencies. Competency here refers to the acquisition and mobilization by students of multiple resources that include strategies, knowledge, technics, and abilities. When it comes to assessment, the first step of the model identifies what criteria should be used. In Quebec, the framework for evaluation of learning published by the Ministry of Education provides a list of official criteria to be used (MELS, 2011) but teachers can select the ones which match best their desired learning outcomes.

Once teachers have identified what is to be taught and what should be assessed, they can consider how they will accomplish this with their students. On the disciplinary side, teachers reflect on the sequence of teaching and the activities that will structure students' learning. Research in history education shows the importance of focusing on active learning strategies in order to respect the epistemology of the discipline that is being taught (Sears, 2014). Students should "do" history or science rather than just consume pre-established narratives or simply read about scientific results. Thus, inquiry based learning (Martineau, 2010) or conceptual learning strategies (Jadoulle, 2018) are two examples of approaches that promote active learning. In these approaches, students are required to engage in a research process that enables them to construct, deconstruct and reconstruct their knowledge (Duquette et al., 2017; Seixas, 2015). When it comes to thinking about how students will be assessed, teachers have, according to De Ketele (2010), three possible approaches: summative, descriptive, and hermeneutic. Depending on the chosen approach, the teacher will use the resources at his or her disposal differently to offer feedback. Resources include assessment instruments, observations and student work collected during class as well as many other possibilities (Fontaine et al., 2013). The summative approach includes assessment activities such as drills, tests, written activities, and others (Craig, 2010; Ghiatau et al., 2011). Based on these activities, the teacher grades student work by adding up the correct answers. Although this approach is often used in the Quebec school system, it does not provide an account of students' competency (Hadji, 2015). The descriptive approach consists of assessing using descriptive grids or scales (Roegiers, 2004). As for the hermeneutic approach, it is carried out by collecting a set of proofs from the students' work (written or not), classroom activities, and observations and seeing how students' learning has evolved through time (De Ketele, 2010).

The second step of the joint model is directed towards the actual lesson planning which consists of setting up teaching activities and feedbacks to promote learning. Teaching activities in history and science are based on a common research methodology that involves questioning, "trial and error", experimentation, model design or realization of a prototype (MELS, 2001). These procedures take place while students complete the tasks imposed by the teacher. Stiggins (2009) suggests a set of potential assessing possibilities while students work, such as: sharing learning goals with the class, providing formal and informal feedback on student work, offering suggestions for improvement and supplying students with self-assessment tools or strategies. Feedback should help the regulation of the student's cognitive and metacognitive strategies (Allal & Lopez, 2007). Consequently, assessments must rely on the objects and learning approaches targeted within an activity (Mottier Lopez, 2015). In order to ensure consistency, the teacher's feedback should be based on the assessment criteria previously decided. To be effective, feedback must be qualitative in nature or in other words, it must describe the student's shortcomings and strengths and suggest remedial strategies when necessary (Hattie & Timperley, 2007). Thus, a student grade should not be considered as a form of feedback, which

can be done in a more informal manner through oral comments or formally through written comments based on the assessment instrument (evaluation grid, comments in a student production, etc.) (Diedhiou, 2013; Jorro & Mercier-Brunel, 2011; Talbot & Arrieu-Mutel, 2012).

Feedback can be divided into four categories: the task performance, the process of understanding how to do a task, the regulatory or metacognitive process, and the self or personal feedback (Hattie & Timperley, 2007). Task performance involves giving the student feedback to ensure that they have a correct understanding of the task they must complete. In science education, a teacher could ask students to explain their understanding of an experiment or scientific model in relation to the studied concepts. Process of understanding feedback is offered during the task and involves feedback that relates to the flow of the activity and the inquiry approaches used. For example, a teacher could take time to reflect with his or her students on the development or implementation of a research protocol or on the possible choice students have when designing a model or a prototype. Feedback on regulatory or metacognitive process is intended to make the student aware of the strategies he has used during the learning process. A teacher could ask students to review their approach, compare it with another student, and adjust it, if necessary. Finally, feedback on self or personal level consists of congratulating the student on his personal qualities or identifying their particular challenges in hope that they can overcome them. This type of feedback does not focus on the learning objects per se, but rather on the person him or herself.

In our joint model, assessment is integrated into daily teaching and learning activities. Thus, assessment is not limited to formal testing. On the contrary, it is associated with in-class observations, questioning and student feedback (Diedhiou, 2013; Mottier-Lopez, 2015). It focuses on students' understanding and requires teachers to structure activities to be more inclusive so that all students have an equal chance of success. To achieve this, teachers should not only adapt the assessment offered at the end of the learning process, but also take every opportunity offered to them to help students progress through the use of appropriate feedback. Assessment plays the role of a sentinel by monitoring students' progress on a daily basis and thus, it provides early warning signs to the teacher of any difficulties that might arise. This allows, in turn, teachers to provide activities that support students' individual needs (Garel, 2010).

3. Methodology

3.1 Collaborative Research

Our research group has completed a collaborative research project (Desgagné, 2001) with seven elementary school teachers from 2016 to 2018. Collaborative research is a bottom-to-top approach where all members of the team provide their different expertise and subsequently, all benefit from the results. New knowledge on current and developing practices is co-constructed by the researchers and the practitioners together (Desgagné, 1997). Teachers' role in this research was to describe and analyze a wide variety of classroom dynamics to help researchers and other teachers in the interpretation of the emerging data (Ward & Tikunoff, 1982). Collaborative research requires that researchers take into account the teachers' point of view by promoting the importance of a network of expertise (Bednarz, 2013). This approach also involves three essential steps: co-contextualization of the research problem, cooperation during the project and co-production of both teaching material and academic publication (Desgagné, 1997). Researchers must therefore, at the various steps of research, respect the logic of both research and teacher practices (Barry & Saboya, 2015). This paper will mainly focus on the third step of the research and present examples of co-productions.

3.2 Participants

For this project, the research team was composed of three academic researchers with different expertise namely: in assessment and evaluation, in history education and in science education. Two pedagogical advisors with backgrounds in history or science education and seven elementary school teachers completed the group. More specifically, the group of teachers was composed of two grade 6 teachers, three grade 5 teachers and two grade 2 teachers. The selected teachers were on their second participation having previously realized another collaborative research project with the team (FUQAC-2015-2017). The collaboration among the team members was therefore already well established at the beginning of the project.

3.3 Data Collection

The research project began in December 2017 and lasted two years. To achieve a network of expertise, the research methodology was built using the three essential steps of a collective research approach and data was collected during focus groups and semi-structured interviews. Table 1 presents how the methodology helped organize the research design.

Table 1

Research Design

Steps	Date	Data collect
Contextualize	December 2017	Focus group (6 hours)
Cooperation	February 2018	Semi-structured interview (60 – 75 min.)
Cooperation	March 2018	Focus group (6 hours)
Cooperation	April 2018	Semi-structured interview (60-75 min.)
Coproduction	October 2018	Focus group (6 hours)
Coproduction	December 2018	Focus group (6 hours)
Coproduction	May 2019	Focus group (6 hours)

Semi-structured interviews were used to better understand participants' teaching practices. In the case of this research, one of the goals was to report on the participant's growing expertise. Thus, the semi-directed interviews were understood within a constructivist perspective that aims at helping participants become self-aware of their own practice, to better understand it so that they may improve or adapt it when confronted with similar tasks or situations (Forget, 2013). The interview framework and the data obtained were both presented in a previously published article (Author, 2020). The analysis of the interviews helped structure the focus groups which were held in October 2018, in December 2018 and in May 2019. As mentioned previously, this article mainly focuses on the third step of the collaborative research approach: the coproduction of teaching material that provided examples of inclusive assessment.

The results of the first year of the project raised three challenges: 1) How to teach and to assess the intellectual skills identified in the history curriculum; 2) Which criteria should be used to assess students' description of scientific problems; 3) How to assess students without a numerical mark while making sure that appropriate feedback could be given to the students and their parents. Thus, during the first meeting in October, teachers and researchers reflected on the epistemology of the discipline of history and the objectives behind learning history in school. Learning history should not be limited to the memorization of dates and events. It should help students develop their ability to think historically through a set of intellectual skills. Team members reflected on their personal understanding of the discipline and how it influenced their own teaching and assessment practices. The meeting then focused on the question of providing adequate feedback to students (task performance, process of understanding, regulatory or metacognitive, self or personal). Team members had the opportunity to consider different forms of feedback they might use in their upcoming teaching activities. The topics of the first focus

group were identified within our joint model as belonging to the learning activity in history (what and how) category and the four levels of feedback category.

In December 2018, the team met to review feedback practices in history. Teachers discussed how different learning activities fostered different types of feedback. Also, the researchers felt the need to revisit the types of feedback one could offer but this time, turning their attention towards the teaching of science. The teachers were invited to comment a grid presenting different types of feedback they themselves had mentioned during the second interview. They also tried to identify relevant questions that could be asked to students to help guide their progress in science. The team reflected on criteria for assessing the description of a scientific problem. The topics of the second focus group were identified within our joint model as belonging to the categories of learning activity in science (what and how), assessment (what and how) and feedback.

During the last meeting in May 2019, teachers shared the assessment tools and practices they had developed in science and history throughout the project. They also shared how their participation had changed their teaching and assessment practices in both science and history. Finally, they discussed how the change in their teaching and assessment practices affected their students. A video clip was created to present a synthesized version of the information shared during the last meeting¹.

The focus group were analysed using a qualitative approach. Thus, the first step was to transcribe the recording of the focus group and integrated the transcription into the NVivo software. We followed Van der Maren's (2009) and Miles and Huberman's (2002) methodology concerning the analysis of written content which is composed of four steps : 1) selection of relevant data for each interview, 2) identification of the units of meaning, 3) classification of the units of meaning in each category of mobilized knowledge, and 4) grouping of the units of meaning according to common themes. An inductive logic that consists of using the theoretical framework as a guide to the analysis process (Savoie-Zajc, 2004) has been favoured by the team. The methodological approach of this project made it possible to answer to several types of triangulation (Denzin, 1970): Data (interviews, documents and, meeting), collectivity and interactive (teacher validation), investigator (multiple observers) and theory (evaluation and didactics).

4. Results and Discussion

During the focus groups, the team members discussed different assessment strategies that would allow them to be more inclusive while still adhering to the discipline's epistemology. Among these strategies the one that felt most appropriate was student interviews. Two examples of the use of the interview in history class are presented here. The first one is related with the creation of an in-class museum and the second with the construction of a lapbook that promotes a comparison of two societies.

4.1. In-class Museum Depicting Quebec in the 1980s

Quebec's grade 6 history curriculum states that students must know the characteristics of the society in the 1980's. One of the project participant decided to plan and realize a teaching activity consisting in the creation of an in-class museum composed of artifacts dating back to the 1980s. Students were tasked with finding ten objects originating from those years. The objects could come from their home but also could be found online. For each of them, students had to write an information sheet and pinpoint the creation of the artefact on a timeline. They also had to link the apparition of the artefact with the historical context and explain what consequences the artefact had on the society. Finally, student had to state if the artefact was still present in today's society and whether or not it had undergone transformation. For example, students could say that the Walkman is still found today but their technology has changed.

¹ Link to the video clip: <https://youtu.be/Ea9O4NOMDz4>

Figure 2 illustrates how items from the grade 6 history program can be included in our joint model.

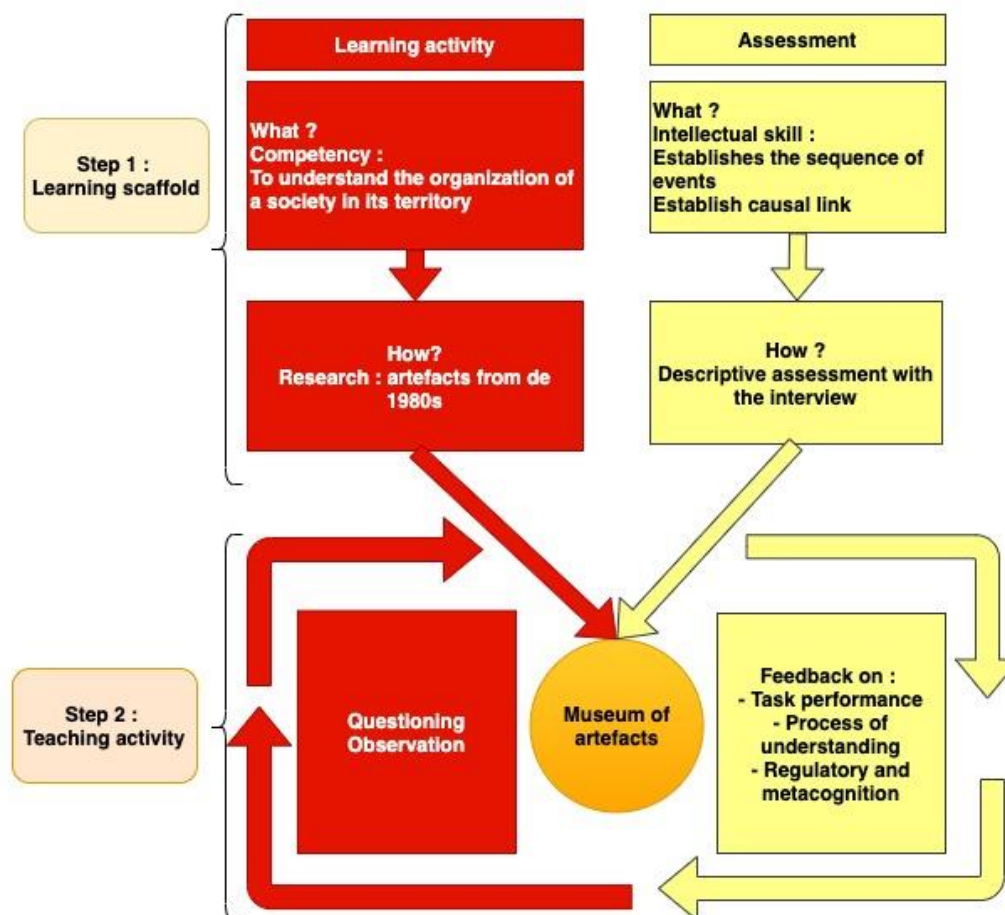


Figure 2: Interview to Assess History

Thus, to assess the student’s competency to “understand the organization of a society in its territory”, the teacher chose to target two intellectual skills namely to situate in time and space and to establish causal connections between events. During the teaching activity, she questioned students and observed their work in order to assess both intellectual skills. She first used design teaching to help students understand the activity:

“I first used design teaching to introduce the objects. For example, I asked why it [the creation of the object] happened, how things used to be before that, what's happening now[...] I would explain the cause behind the invention, why this change happened at that moment in time, etc. For those students who didn’t have an object from home, I told them they could also use pictures of events or objects found on the Web.” (E2: free translation)

The teacher was able to assess her student throughout the teaching activity. To do so, she created a grid describing how students should progress in their understanding of the studied society and in their ability to establish causal connections between events. She used the assessment strategy of student interviews to establish whether or not students were developing their intellectual skills.

In the focus group, the teacher explained how she dealt with a student who brought an object that didn’t fulfill the criteria to complete the task: "When the student couldn't do it [the task], I couldn't penalize him. So, I would ask: "Your game, why couldn't we play it before? It wasn't invented... What did people do instead? "[...] I help them question themselves. " In other

words, the teacher used a problem-solving strategy that allowed her to assist her students and help them develop their understanding of the historical context as well as their ability to establish causality. In this case, the feedback focused on self-regulation and self-assessment. This example reveals strong ties between the nature of the learning activity and the assessment strategy favored by the teacher. Moreover, these strong ties make it possible to highlight the diversity of students' needs. The teacher was able to tailor her expectations to the student's needs and promote self-assessment. This activity is inclusive since all the students were able to develop the targeted intellectual skills at their own rhythm supported by the teacher's continuous feedback.

4.2. A Lapbook to Compare Two Societies

This second example features the creation of a lapbook. As depicted in Figure 3, a lapbook is a folded piece of cardboard which has two ledges on the top. Each ledge presents the characteristics of a society. When the lapbook is opened, the interior provides space to compare different aspects of both societies. In her teaching activity, the second teacher asked her students to compare Quebec in the 1980's and South Africa around 1980. The goal of the project was to help students "be open to the diversity of societies and their territories". To achieve this, students began by reading about South Africa. Then, they were asked to fill in summary sheets on what they had learned. Once the research phase was completed, students created a lapbook that compared both societies. Figure 4 shows how these new items from the grade 6 history program can be included in our joint model.

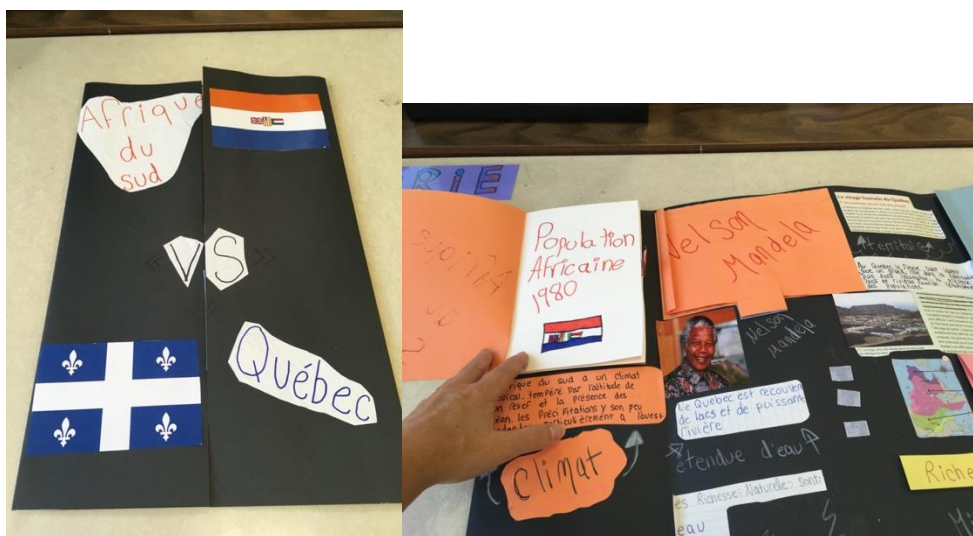


Figure 3 : Example of a LapBook comparing South Africa and Quebec in the 1980's

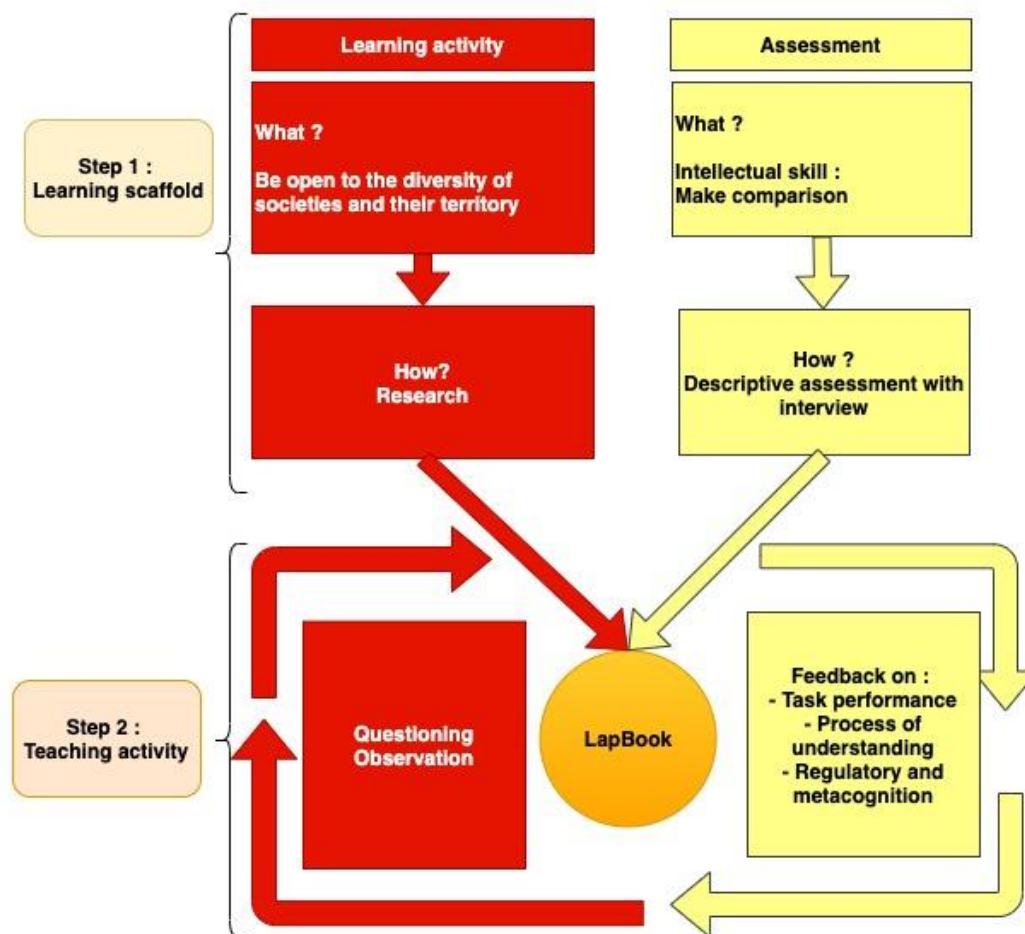


Figure 4: Questioning to Assess History

During the creation of the lapbook, the teacher questioned her students as a mean to give feedback on the task and on the process as well as a way to promote self-regulation. Here are some examples of questions asked during the creation of the lapbooks:

- Have you looked at the territory of each society?
- What kind of climates are there in South Africa and in Quebec?
- What is natural wealth and resources?
- Where can you get the information you need?

To assess her students, the teacher opted for the interview during which, students used their lapbook to compare both societies. The teacher adapted her questions according to the students' needs, using therefore a descriptive approach to assessment (De Ketele, 2010). The lapbook activity also offered students the opportunity to express themselves according to their needs and personalities. Each student could develop his or her ability to make comparisons and the versatile structure of the lapbook gave them freedom to express this ability in different ways. We see here the emergence of an inclusive approach.

4.3. Some examples of inclusive assessment strategies in science and technology

When teaching science, one teacher chose an experimental approach to learning. This choice influenced her assessment strategy making her favor observations and questioning approaches.

The first activity was aimed at discovering how electrical circuits function. Students had to create an electrical circuit but the challenge was to come up with solutions to save electricity. The competency developed by the activity was to help students propose explanations or solutions to scientific or technological problems. Figure 5 presents our joint models with the criteria found in the science and technology curriculum.

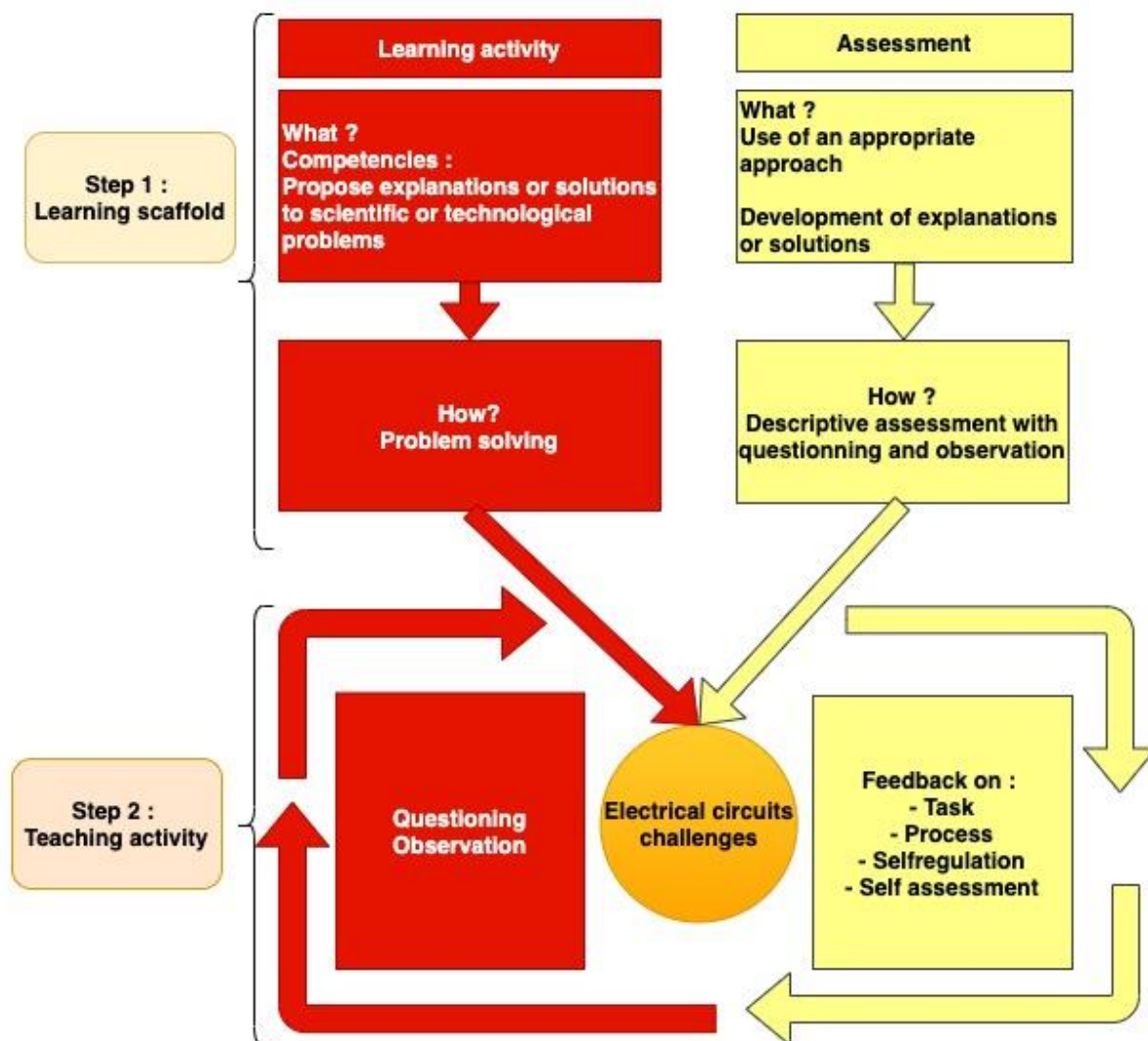


Figure 5: Assessing Science through Query

During the activity, the teacher walked around the classroom and observed her students as they completed the challenge. She took this moment as an opportunity to question them, asking them to explain their solutions and she was giving them feedback in return. The teacher realized that her questioning helped students self-regulate which resulted in them gaining greater autonomy in their problem-solving strategies. While analyzing the focus group data, researchers found that teachers were no longer looking for the right answer when questioning their students, but rather they were trying to assess the approaches students used to complete the task at hand.

The second activity developed to teach science was to compare the quality of plasters bought at the pharmacy. Through this activity, the teacher could assess students' competency to propose explanations or solutions to scientific problems. Students had to implement an experimental approach to verify the quality of different brands of plasters. The goal was to identify the best brand. Each team was assigned a specific property to check. For example, one team had to check for durability, while the other the waterproofness. To do this, students elaborated their own experimental methodology, which they needed to test and adjust if necessary. For example, for adherence, students would put the plasters on their knees and rub them with their jeans. The teacher observed her students in action and used questions to assess them. She had created a descriptive grid build around two criteria, namely: The use of an appropriate scientific approach and the ability to develop explanations or solutions. Her

feedback mainly focused on the realization of the task and how students self-regulated and self-assessed themselves.

The two science examples show that the assessment approach chosen by the teachers allows them to tailor their interventions to the needs and knowledge of their students. The aim is no longer to find the right answer but rather to help student learn a scientific method. When teachers have a better grasp of the epistemology of the discipline and start focusing on criteria to guide coaching, they start to provide feedback that facilitates student success and therefore helps to make assessment more inclusive.

4.4. Believe in the educability of the student by opting for assessment practices that regulates learning.

An inclusive approach requires that teachers believe in the educability of their students (Prud'homme et al., 2011). It means that teachers must be convinced that any student can succeed in the correct learning environment. When assessment assumes a regulatory function, it makes it possible to improve support for the pupils and allows the teacher to reflect on the learning situations he or she has put in place. However, to properly guide students' learning and meet their individual needs, it is imperative to carefully choose the learning target. This cannot be achieved without an in-depth understanding of the epistemology of the discipline being taught.

The goal of school history is not to memorize a set of dates and events but to develop students' historical thinking through the learning of intellectual operations (Seixas and Morton, 2013). When too much emphasis is placed on memorization, students who have a harder time remembering dates are placed at a disadvantaged which can results in failure. Historical thinking, on the other hand, evolves through the development of intellectual operations which can be observed in multiple ways by the teachers. For example, establishing facts can be done using images for students with reading difficulties and historical texts for students with greater reading skills. However, if a teacher lacks the proper epistemological understanding of the discipline, they might refrain from an assessment based on students' historical thinking skills and limit themselves with tests and quizzes that rewards a single type of learner. Thus an inclusive approach can only be attained through epistemological understanding that influences in turn both the learning strategies and the assessment approached favored by a teacher.

A similar observation can be made in science education. As in history, the goal of science education is not to learn encyclopedic knowledge recognized as scientific knowledge, but to develop reasoning through investigation. Students build their own knowledge through observation, trial and error and reflection. This knowledge is negotiated and argued in the same way scientific knowledge is negotiated and argued. It follows the same process of elaboration and validation. Science learning thus provides both procedural as well as factual knowledge. Feedback and assessment should be concerned with both types of knowledge which can be expressed in different forms such as explanations, solutions, models, drawings, oral presentations, etc. The challenge is, therefore, to provide feedback during the learning process, but also to reflect on the learning targeted by this feedback in a broader perspective that includes as well the concepts, approaches, tools, processes, language modes, and reasoning involved. When offering activities that allow the student to be actively involved in the demonstration of his or her competencies, an inclusive approach becomes possible. The teacher will readjust the material as he or she observes students, adding or removing information according to their needs.

5. Conclusion

This paper wished to offer a reflection on the importance of teachers' understanding of disciplinary epistemology as the key to gaining greater freedom in assessment practices and thus promoting a more inclusive form of assessment. Data emerging from the collaborative research made it possible to observe concrete learning activities that answered the criteria to inclusive education. And, with the teachers acting as co-researchers, examples of assessment practices such as interviews and questions embedded in the learning activities were created. At the end of this project, the research team noticed that when teachers change their understanding of the discipline, automatically the activities take on a different form and become grounded in inclusive education. In assessing students, teachers modify their strategies and move towards a descriptive approach to assessment. In this way, the activities and the assessment become much more coherent and inclusive. If the goal is to move towards more inclusive assessment practices, with a regulatory function and a descriptive approach, it is important to reflect on assessment from a discipline perspective, to work closely with teachers to ensure that their understanding of the subject (what and why) is grounded in their disciplinary knowledge and to foster multidisciplinary research teams that include education specialists and learning assessment specialists.

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