Support in Education

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Edited by

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Foreword

Educational assistance is a broad and interesting subject! Its study leads to an analysis of a set of questions on the permeability between support and other concepts more related to instruction, in which information and communication technologies are likely to play a major role.

The assistance may be reciprocal or symmetrical, following a pattern well described by Mauss: give, receive, give back… But it often applies to other cases that are more or less asymmetrical.

Different actions are linked to this notion in the field of education: supervising, guiding, supporting, tutoring, mentoring and sometimes also caring, because medical or paramedical staff can also play a part in this regard.

Supervising implies a higher hierarchical position. A supervisor is an instructor, sometimes an inspector (indeed, in ancient Greek "inspector" is *episcopos*, the one who observes from above, who will then designate the bishop in the Christian Church). He/she leads operations and has the means to influence the actions of people to do what is deemed necessary by an institution that has defined the rules of good practice. Behind all this is the responsibility for controlling a job or situation.

Guiding is also asymmetrical, although there are different variants, from a supreme leader to a mountain guide, who is there to make the planned excursion a success, but who still has a strong responsibility and whose opinions cannot be easily challenged, because of his or her expertise. It seems interesting to me to note that the situation is (fortunately) different for computerized devices, such as GPS, which are only used (for the moment) for information purposes and are reconfigured if we do not follow their advice.

Supporting people is a less asymmetrical concept, although, as Guy Berger pointed out, it can have several meanings and can refer to accompanying someone where they want to go, or where you want them to go.

Tutoring, linked to the idea of tutelage, also has a variety of meanings, centered around protection against possible deviations: it can be applied to a fragile person who needs to be protected, as well as to students who need to be guided through distance learning as well as in person. These tutors have a status below that of teachers when they do not have direct responsibility for the content, even if they play an important role in its transmission.

A variant of the tutor is the mentor (probably a less formal notion, whose mythical origin is Mentor, the tutor of Telemachus whose traits are taken on, in the *Odyssey*, by the goddess Athena to help him and protect him from the dangers that threaten him. Tutors and mentors can help to support learning, i.e. to stimulate it, as well as to strengthen structures despite opposing forces.

In short, the question of assistance opens up an exciting, polysemous field of reflection, which is divided into a multitude of different cases, including the very important one of helping people with disabilities, who may be incapable (not incompetent) of carrying out certain tasks requiring aptitudes that they do not have.

Digital issues are the second major theme of the book, and make their way into some chapters, sometimes discreetly, sometimes as the main component. Another protean subject! They are addressed both in guiding educational technology, including automated assessments with varying degrees of challenge, and in instruments designed to change learning situations by aiming to give learners more scope for action and by taking into account non-formal online resources and mutual assistance-based activities that may involve activist communities.

It is one of the great merits of this book that the issue of assistance is addressed in all its complexity and generality, using varying research approaches and with the relevant levels considered. Its structure makes it possible to discover different situations and to learn about conceptual models that have a profound connection with the issue of assistance, such as the teacher's position. The technologies involved are instruments that help to solve problems encountered by the actors (teachers and learners, as well as those in charge of training systems).

The questions asked and the issues raised are part of a line of thought that goes back, at least, to progressive education, popular education and then the utopias of school-less societies and friendly societies, as published by Ivan Illich in the early 1970s.

This book is a timely resource for those interested in the subject. I would wager that, as was the case for me, they will see their thinking rejuvenated and strengthened by reading it.

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PART 1

Theoretical Approaches

1

The Concept of Assistance

1.1. Introduction

The concept of assistance is a subject that presents different facets depending on whether one is on the side of the student, the teacher or the educational institution. The first is at the heart of the pedagogical relationship between teacher and student. In daily classroom interactions, it refers to the student's request for assistance, which is often referred to in English as "help seeking". The second refers to the adaptations made by teachers to adapt their teaching to the characteristics of their students, and, in particular, to enable the weakest students to make progress. The term "assistance" then refers to the differentiation of the objectives, forms and content of the assistance provided (methodological, disciplinary, transversal), whether produced by the teachers themselves or by other actors (resources found on the Internet, for example). In this context, the assistance refers more generally to the concept of scaffolding[1]. In English-speaking countries more specifically, this is a question of adaptation or differentiation according to the target students and the directions chosen by the teacher. The third facet of the assistance more specifically concerns pupils with difficulties, to whom the institution offers various assistance mechanisms. This is the remediation aspect of the English-speaking world's programs and interventions.

Chapter written by Caroline VIRIOT-GOELDEL.

1 The scaffolding concept comes from Bruner's work. The scaffolding process consists of making the child capable of solving a problem and carrying out a task that would have been, without assistance, beyond his or her abilities. In order to do this, the adult takes "in hand those elements of the task that initially exceed the beginner's abilities, allowing him to concentrate his efforts on the only elements that remain in his field of competence and to complete them" (Bruner 1983, p. 263).

Concerning the request for assistance, a request launched on the ERIC[2] search engine returns 99 peer-reviewed articles containing the keyword "help seeking". Reading the abstracts allowed us to remove articles that were far removed from our theme of assistance in an educational context, particularly those related to health. Two groups were then differentiated: the first refers to 44 articles on requesting assistance in primary and secondary classrooms, and the second refers to an older audience (high school students, students, student teachers and new teachers). The content of the first corpus of articles, which we are particularly interested in this chapter, relates largely to the English-speaking world. Its analysis was completed by the contents presented in a French-language handbook on this topic (Puustinen 2013).

With respect to classroom support practices in primary and secondary schools, it is the work of French researchers that has provided us with the most fruitful avenues for reflection; we have therefore made use of research on pedagogical differentiation (Piquée 2010; Goigoux 2016), the work of the CIRCEFT-ESCOL[3] team and the RESEIDA network[4] (Bautier 2005; Rochex and Crinon 2011), particularly on the issues of leveling down induced by differentiation. Finally, we identified the results of the "beginning reading and writing. Study on the influence of teaching practices on quality of basic learning" (Goigoux 2016; Piquée and Viriot-Goeldel 2016).

As for experienced and evaluated intervention programs around the world, their very large number – the government "What Works Clearinghouse?" database lists 581 that have been evaluated in the United States – has forced us to restrict our literature review to reading and writing assistance in primary schooling. We conducted a search in the ERIC database limited to meta-analyses with the keywords "meta-analysis" and "reading intervention" and selected the "peer-reviewed scientific journals" option. A total of 88 articles were selected by the database, mainly meta-analyses, and also some literature reviews (review, synthesis, best evidence synthesis). The reading of the abstracts was then used to refine this selection. All 21 articles selected belong, in fact, to the English-language literature, which reflects the state of the strengths in the subject area. In order to take into account the linguistic and contextual specificities of this teaching in French schools, we also examined the studies "beginning reading and writing" (Goigoux 2016) and "reading

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2 Education Resources Information Center.

3 Interdisciplinary research center: culture, education, training, work, education team and schooling.

4 The RESEIDA network (*Recherches sur la socialisation, l'enseignement, les inégalités et les différenciations dans les apprentissages,* research on socialization, teaching, inequalities and differences in learning) was created in 2001 at the initiative of Élisabeth Bautier and Jean-Yves Rochex (ESCOL team): https://circeft.fr/escol/reseau-reseida-escol/.

assessment" (Gentaz *et al.* 2013) and the "Evalire" experiment (Leclercq *et al.* 2015, 2016) as well as two other experiments recently conducted in France (Bianco *et al.* 2012; Ecalle *et al.* 2019).

The corpus thus compiled reflects the state of French and English-language literature on the concept of assistance. On the basis of this work, three aspects of the concept of assistance will be examined: requests for assistance, assistance practices within regular classes and means of providing additional assistance.

1.2. The request for assistance

The request for assistance can be defined as a verbal interaction at the student's initiative, the purpose of which is to enable the student to progress in his or her learning. Long considered to be the preserve of weak and less independent students, its key role in the learning process was gradually highlighted by the pioneering work of Nelson-Le Gall (Nelson-Le Gall 1981, 1985) in the 1980s. As a result of this work, several models of the application process have been proposed (see, for example, (Nelson-Le Gall 1981; Newman 2000)), including the metacognitive processes of identifying a problem, recognizing a need for assistance, examining the potential objectives, costs and benefits of the application (or lack of application for assistance), choosing the expert to be sought and obtaining assistance, using it and evaluating the process. The number of processes involved reflects the complexity of an approach that involves both cognitive and socio-cognitive aspects.

1.2.1. *A self-regulated process*

One of the challenges when thinking about the request for assistance is to identify its function in order to distinguish a request requiring excessive dependence on the teacher from the one that puts the learner on the path to autonomy. Nelson-Le Gall (Nelson-Le Gall 1981, 1985) thus distinguishes between the request for "executive" assistance, by which the student aims to have his or her task performed by others, and the "instrumental" request, which ultimately aims to understand the task and perform it independently. It is this latter form of request that is referred to as a "self-regulated learning strategy", each step of which can be characterized by self-regulatory indicators (Puustinen 2013). The concept of adaptive help seeking refers to this type of self-regulated request for assistance that contributes to increasing cognitive autonomy and facilitating independent learning (Newman 2000, 2002).

1.2.2. *A socio-cognitive process*

While the request for assistance requires a high level of control and regulation of various cognitive and metacognitive abilities, it is also a social and socio-cognitive process. Current research increasingly focuses on the social interactions of the request for assistance (Karabenick and Newman 2009). A student's ability to solicit an expert thus depends largely on his or her parental socialization (Newman 2000; Stright *et al.* 2001; Calarco 2011), which is a predictor of the request for assistance. In addition, teachers themselves, the relationship they have with their students and the classroom climate they build are likely to facilitate or hinder these interactions. Several studies aim to identify the influence of the classroom climate, or the status of students (popular, average, rejected) on the request for assistance, particularly in the solicitation of peer experts (Nelson-Le Gall 2006; Shim *et al.* 2013). Analyzing the interactions between students who seek assistance and those who provide it in group work find that their corpus illustrates Vygotskian and Piagetian's theories on the role of socio-cognitive interactions in learning (Weeb and Mastergeorge 2003). Focusing on collaborative learning theories, work on requesting assistance from peers in student groups or tutoring arrangements is another well-documented area of research on requests for assistance.

It also appears that the request for assistance has a social dimension. Indeed, a sociological study comparing the requests for assistance from students from contrasting social backgrounds found that the social affiliation of students strongly influences their request for assistance in class (Calarco 2011). As a result, pupils from the middle class ask their teachers for more help than their classmates from the working class. Rather than waiting for help, they contact the teacher directly, sometimes even interrupting him or her, to make their request. This gives them more help, less time to wait and a better ability to perform the academic tasks they are asked to do. By implementing the skills and strategies of the request for assistance in this way, they gain an advantage. This helps to reinforce social inequalities within the same classroom.

1.2.3. *Obstacles and adjuvants to the request for assistance*

Another challenge of the work in this area is identifying the characteristics of students seeking help, let alone those of students who avoid taking this approach. In general, the avoidance of requesting assistance is linked to both individual student characteristics and class characteristics. As expected, students who avoid asking for help are more anxious, have a poorer academic performance and/or a poorer perception of their academic effectiveness. However, the quality of the teacher's relationship with his or her students is likely to reverse this trend, as weak students

may feel allowed to seek help when the teacher–student relationship is warm and encouraging (Ryan *et al.* 1998, 2005).

Finally, among the classroom characteristics that may prompt or hinder the request for assistance is the objective pursued by the teacher in his or her "way" of making the students work (classroom goal structure) and the students' perception of it. This concept, at the heart of current research on requests for assistance, refers to the type of achievement emphasized by the current educational practices within a learning environment. Current research in this field distinguishes between a "mastery goal structure" emphasizing the development of competence and a "performance goal structure" emphasizing the development of competence (Federici *et al.* 2015). The mastery goal structure is characterized by an environment in which the teacher emphasizes the efforts made by the student, his or her understanding of the task, and values individual performance improvement. As a result, students may have some control over the choice of activities, or even the learning objectives they can set for themselves; and errors are considered an integral part of the learning process.

On the contrary, in a class whose objectives are structured around performance, the reference to the standard is omnipresent. We do not refer to each student's individual progress, but to an external norm: we compare students with each other, classes and schools on the basis of standardized, normalized and disseminated assessments. Success is then defined as surpassing others (Federici *et al.* 2015). We can thus see how the choices of teachers, whether made consciously or not, can affect different cognitive, affective and motivational factors. Finally, it is not so much the structure of objectives as it manifests itself through educational and teaching practices in the classroom that matters, but the way in which this structure is perceived by students (Meece *et al.* 2006). Several studies conducted in different contexts show that classes where the objectives are structured around the mastery of skills generate more requests for assistance than classes organized around performance, in which, on the contrary, there are more avoidance-related behaviors (Ryan 1998; Shannon *et al.* 2012; Shim *et al.* 2013; Federici *et al.* 2015).

1.2.4. *Requesting assistance in a digital environment*

The introduction of digital technologies at school and at home has greatly increased the possibilities of requesting assistance. Learners can potentially request or seek help online at any time. While most of the research on this topic focuses on university and/or teacher audiences, Puustinen, Bernicot and Bert-Erboul have studied requests for assistance made by junior high school students on the forum of a mathematics website – a forum on which teachers and junior high school students interact asynchronously and anonymously (Puustinen *et al.* 2011). These authors analyzed both the functions of assistance (self-regulated requests for assistance or

requests for responses) and the form of the request for assistance, as well as the interactions between the two. However, while digital work environments are places where learners can ask for help from an expert via a forum, they can also seek assistance by consulting different websites themselves in search of information. It seems that the boundary between the request for assistance and the search for information is gradually blurring as digital media (computers, cell phones, tablets, interactive watches) and the uses made of them by teachers and students increase in number and diversity.

Traditionally, the term "information research" has been used to describe an approach whereby the learner conducts, alone or accompanied, online research on a given topic/subject with the primary aim of performing a requested task and the secondary aim of perfecting his or her knowledge. To do this, the learner must use several sources, with all the choices involved in working from multiple requests. Consequently, to answer one or more questions, students must choose, organize their reading and make various decisions, such as whether to seek additional information, review the questions asked and so on (Puustinen and Rouet 2009). Many mechanisms, such as inquiry-based learning, mobilize this type of approach, from school to university.

It must be noted that this type of system aimed at learning how to search for information and/or build knowledge calls into question a number of fundamental distinctions made so far in the field of requests for assistance. As a result, while it has hitherto been commonly accepted that only instrumental demand, emanating from regulated self-learners, made it possible for the learner to make progress, it is now conceivable that a substitute type of assistance consulted online, thanks to which learners can familiarize themselves with a procedure used by a peer, can enable them to extract procedural knowledge (Puustinen and Rouet 2009). The use of digital technologies for learning purposes is also changing the boundary between the concepts of requesting assistance and seeking information (Puustinen and Rouet 2009). Indeed, although we traditionally distinguish between the request for assistance (which refers to human interaction) and the search for information, which refers to access to sources of information, it now appears that the two processes involve partly similar cognitive skills and processes. Both cases involve, for example, the use of an expert, whether present or online, human or "mechanical". It is according to the nature of this expert and her or his location that Puustinen and Rouet (2009) propose a new theoretical framework that merges the request for assistance and the search for information under the term "help seeking". These authors distinguish more particularly three types of help seeking in a digital environment:

– the expert is a human being present while the students use a digital environment;

– the expert is a human being who communicates via a digital interface (see, for example, Puustinen *et al*. 2009; Huang and Law 2018);

– the expert is a tool or a computer system.

This new theoretical framework emphasizes the adaptation of assistance to the needs of the learner – an adaptation that can be situated on a continuum that ranges, for example, from the research situation in a passive information system (such as an encyclopedic article on the Internet) to the excellent adaptation that an interaction with a human assistance provider can provide, which will answer exactly the question asked by the learner (Puustinen and Rouet 2009).

In summary, the request for assistance initiated by the student can take different forms (verbal request and/or search for information) and can be addressed to an expert (online/offline; human and/or technical), in various geographical environments (in class and/or at a distance), in the heart of daily teaching–learning situations.

1.3. Assistance practices in the classroom

1.3.1. *Verbal interactions*

One of the ordinary forms of teacher-initiated support in the daily life of classes from elementary to high school is to provide a stronger presence with the students they wish to help. This support includes verbal interactions whose objective is, for example, to stop undesirable behavior and/or re-engage the student in his or her task, and/or discuss the task being performed.

Piquée observes individual interactions between teachers and their pupils in difficulty in first grade (Piquée 2010). The effectiveness of these interactions is mixed; the author finds no significant differences in the amount of interactions between teachers whose weakest students progress the most and those whose progress the least, nor in the amount of interactions focused on the student's behavior. However, it appears that interactions concerning the task are significantly more common in the most effective classes (on average, almost three-quarters of verbal actions) than in the others (less than two-thirds). In other words, the teachers who enable their students to make the most progress are those who offer assistance that is more focused on the task at hand. Detailed analysis of these task-centered verbal interactions reveals that these interactions are more focused on explaining and performing the task than on understanding processes and reflexivity among the most effective teachers.

1.3.2. *Differentiated instruction*

Teachers, when designing their lessons, may plan to adapt tasks for some students, an operation commonly referred to as "differentiating instruction". This is based on the principle that the student learns best when the tasks offered are adapted to his or her level of learning, characteristics and needs. Nootens, Morin and Montesinos-Gelet specify that there is not "one" pedagogical differentiation, but varied differentiating practices, defined as:

> all the "situated and singular" acts of the teacher, and the meanings he or she gives them, acts which aim – in planning, intervention and evaluation […] – at adapting teaching to the heterogeneity of the class and the characteristics of each student. (Nootens *et al.* 2012, p. 272)

Differentiation plays an important role in the French school system. Goigoux and his colleagues (Goigoux 2016) observe that in the first grade classes of experienced teachers, nearly 26.3% of the tasks given to students are differentiated, hence the importance of questioning their effectiveness. Several researchers present differentiation as a characteristic of effective teachers (Taylor *et al.* 2000; Nootens *et al.* 2012), or even as a prerequisite for the progress of all students (Connor *et al.* 2004; Fuchs and Vaughin 2012), while others highlight some negative effects (Piquée and Suchaut 2004; Bautier 2005; Bautier 2005; Piquée 2010; Rochex and Crion 2011; Toullec-Thery and Marlot 2015). This concept of differentiation covers a wide variety of implementations, both from an organizational point of view and from the point of view of the content taught, so it is difficult to assess the effectiveness of differentiation in general. In fact, the question is not so much whether differentiation is an effective practice, but rather under what conditions it can be effective.

1.3.2.1. *Organization of the differentiation*

Differentiating implies changing the organization of the classroom. It can take the form of individual work for one or more students concerned, isolated or grouped close to the teacher, or group work. It can be a one-time event or take place long-term. In the latter case, we can refer to an ability-based grouping on the other side of the Atlantic, a term that covers more or less the concept of a "level group" (Vaughn *et al.* 2001). The question then is whether the weakest students should be grouped in the classroom to teach. The idea is attractive: the teacher can then progress at the pace of these students as the small group allows her or him to devote more attention to them and encourage their involvement in the tasks. It is also a widespread method of teaching reading in the first year of elementary school in the

United States. However, it does not seem to be particularly effective. Groupings into groups or grade classes have not been shown to be effective with weak students, but rather with strong students (Slavin 1987; Duru-Bellat and Mingat 1997; Ireson *et al.* 2005; Piquée 2007). Finally, this modality of teaching by level can have several negative effects in terms of stigmatization and lower student motivation (Puzio and Colby 2013).

1.3.2.2. *Differentiating tasks and/or methods of carrying them out*

If we consider the tasks given to students, we can distinguish different ways of differentiating. Piquée distinguishes two main ones (Piquée 2010). The first is to offer some students specific tasks. Aiming at different objectives from those set for the rest of the class group, the tasks offered to these students are supposed to be adapted to their learning needs. The second modality consists of proposing the same tasks with the same objectives to all students, but by proposing various adjustments (reduction in length, increase in time) or scaffolding (more pronounced assistance from the teacher, additional tools). This second modality would be the most common in first grade (20% of the tasks offered in first grade according to Goigoux 2016).

The first modality, which consists of offering certain pupil tasks with different contents and substituting those assigned to the rest of the class group, is associated with less progress for the weakest pupils (Goigoux 2016). However, these results call for caution owing to the low occurrence of the first modality. The second differentiation modality would seem more conducive to students' progress (Bressoux 1994; Duru-Bellat 1996; Descampe *et al.* 2008; Piquée 2010; Goigoux 2016). This effect is exerted on the weakest students, while not affecting the performance of others (Goigoux 2016). This type of differentiation, based on the scaffolding put in place by the teacher, therefore seems to have positive effects on the performance of the weaker students.

While several studies conclude that differentiation is beneficial to students' learning, others highlight the pitfalls. Several qualitative studies have highlighted a number of counterproductive phenomena that have arisen through pedagogical differentiation. There has been a decrease in teachers' requirements for struggling students, fewer learning opportunities for struggling students, fragmentation of tasks and cognitive operations by the teacher (Bautier 2005; Rochex and Crinon 2011; Toullec-Thery and Marlot 2015). Finally, a teaching practice designed as an aid can eventually take the student away from the knowledge contents and prevent their construction. In addition, differentiation can lead to stigmatization of the weakest students (Piquée and Suchaut 2004; Piquée 2010).

1.3.2.3. *From helping low-ability students to sustainable "inclusive functioning"*

The differentiation thus understood is not, however, reduced to the question of assistance alone, but may appear to be a pedagogical method of functioning that makes it possible to take into account the heterogeneity of the class, particularly in an inclusive education system. Taken to the extreme, the logic of differentiation can lead to the complete individualization of teaching. Several studies conducted on this issue suggest promising avenues (see, for example, Connor *et al.* 2007, 2009, 2013). It remains to be seen to what extent this pedagogical differentiation can be generalized.

In a context where attempts are being made to reduce public expenditure – see, for example, the decline in the number of specialist teachers in France despite increasing class heterogeneity (Viriot-Goeldel 2013) – this individualization approach may seem to be a preferred option as it is particularly cost-effective. It appears to be the solution that would enable the teacher to meet all special educational needs, and thereby overcome academic difficulties.

However, in the scientific field of reading difficulties, this position is far from being unanimously accepted. Gersten *et al.* (2008) highlight the complexity of an effective differentiation approach to using evaluation data to build differentiated reading instruction. The first step is to use the appropriate assessment instrument to determine students' needs in the key competencies of learning to read and write. Then, the type of teaching, its intensity and form should be varied according to the targeted skills. All in all, effective differentiation appears to be an extremely demanding approach and one difficult to implement, both in terms of the theoretical and pedagogical knowledge associated with learning to read and in the management of the classroom on a daily basis. It is all the more understandable, given such complexity, that it is difficult to answer unequivocally the question of the effectiveness of such a system. Some authors thus realistically acknowledge that "fulfilling the need for differentiated instruction at the classroom level is often beyond the skill set of even the most proficient teachers" (Fuchs and Vaughin 2012). In addition, Vaughn, Denton and Fletcher (Vaughn *et al.* 2010), who devote an article to this question, argue using observational studies and experiments that only an "intensive and personalized intervention" can help students with reading disabilities. As a result, when, despite quality education for all and assistance provided by the teacher, some pupils do not progress enough, additional assistance interventions that are more demanding in terms of intensity and that may have more specialized teachers (e.g. specialized teachers or those trained in a specific scheme) should be put in place.

1.4. Intervention programs for struggling students

Struggling students may be offered various kind of assistance within school or outside of school. The term "intervention" usually refers to an individual or small-group specific teaching time focused on students' difficulties and using a specific approach. In general, the aim of intervention programs is to enable pupils with difficulties to progress by increasing the intensity of the teaching they receive. Harn, Linan-Thompson and Roberts (Harn *et al*. 2008) point out that intensity can be conceptualized through three dimensions: time, group size and delivery of instruction.

The idea that struggling students need more time for learning that they find difficult is now agreed (Suchaut 1996, 2015; Snow *et al*. 1998; Torgesen 2002; Torgesen 2004; Mathes *et al*. 2005). Increasing the intensity of the teaching provided means, first of all, giving students more time to work on certain skills and giving them more opportunities to learn (Torgesen 2002, 2004) in more appropriate interactive ways.

Moreover, increasing intensity also means increasing the student's commitment to his or her own learning. Within a class group, a struggling student can easily disengage from the difficult task proposed by the teacher who is making a subject difficult. Not being able to do it, the student partially or totally refuses the work. In individual tutoring or in small groups, the student will be more involved in the proposed task, as he or she is more often called on by the teacher. In other words, the question of instructional time is not so much that of the instructional time offered to students as that of the time during which students are engaged and called on by the teacher individually in teaching appropriate to the perceived level. In this context, strategies to optimize the school time needed to meet students' needs may include not only increasing the time available, but also increasing students' engagement time, depending on the size of the group (Harn *et al*. 2008).

1.4.1. *The intensity of interventions*

This is the intensity of assistance measures, seen from the point of view of the amount of time offered to students, which is central here. The monitoring provided by the specialized teachers' network (RASED[5], network including specialists named

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5 *Réseau d'aide et de soutien aux élèves en difficulté* (RASED): a support network for struggling students in the French school system.

Teachers E[6] and Teachers G[7]), as well as complementary teaching activities[8], constitute the main assistance in the school context for pupils with difficulties in French primary education.

The data collected in France as part of the "beginning reading and writing" study show that pupils followed by specialist teachers (Teacher E) receive an average of 20 hours of assistance over the 30 weeks of the study (Piquée and Viriot-Goeldel 2016). However, this average covers contrasting situations: the number of pupils intensively helped is ultimately small. On the contrary, a large number of pupils are assisted in a non-intensive way, i.e. they receive only a few hours of assistance during the year, as shown in the study conducted on the amount of assistance offered by specialist teachers presented in Table 1.1.

An international comparison allows a better appreciation of the amount of time that French support systems offer to weak students. Most American intervention programs offer a daily intervention of between 20 and 50 minutes (Wanzek and Vaughn 2008; Slavin *et al*. 2011). The example of Reading Recovery, one of the most common interventions in the United States, is particularly significant. A student benefiting from this program receives individual assistance of 30 minutes per day for a period varying from 12 to 20 weeks provided by a specially trained teacher. Depending on the needs of the students, this represents a total of 30–50 hours of individualized assistance per year (Viriot-Goeldel 2011). Taking into account the average volume of assistance measures, the average volume in the United States would be 63 hours for interventions with a duration of 20 weeks or less (Elbaum *et al*. 2000).

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6 Within RASED, Teacher E's mission is to provide "assistance to students who have proven difficulties in understanding and learning through school activities. For the specialized teacher, it is a matter of preventing and identifying, through an analysis shared with the class teacher or the pedagogical team of the cycle, the learning difficulties of these students and providing pedagogical remediation as part of a specialized assistance project" (Menesr 2014).

7 Teacher G is "the specialized teacher in charge of specialized assistance with a dominant re-educational focus who provides assistance to students whose situation analysis shows that their relationship to the requirements of the school must evolve, and that investment in school activities must be established or restored. For the specialized teacher, it is a question of preventing and identifying, through an analysis shared with the class teacher or the pedagogical team of the cycle, the behavioral difficulties of these students and implementing actions, within the framework of a specialized assistance project, to change situations" (Menesr 2014).

8 The *activités pédagogiques complémentaires* (complementary teaching activities) were set up at the beginning of the 2013 academic year, succeeding the personalized support system. They take place outside normal school hours. They allow teachers to offer assistance to their students with learning difficulties, as well as supervise other activities planned by the school project, at a total hourly rate of 36 hours per year per class (Menesr 2013).

	Number of students	Percentage of students assisted (n = 318)	Cumulative percentage of students assisted (n = 318)
Students who have not received any help from Teacher E	2189	–	–
Students who received between 1 and 10 hour(s) of assistance	120	37.7%	37.7%
Students who received between 11 and 20 hours of assistance	87	27.4%	65.1%
Students who received between 21 and 30 hours of assistance	54	17%	82.1%
Students who received between 31 and 40 hours of assistance	30	9.4%	91.5%
Students who received between 41 and 50 hours of assistance	12	3.8%	95.3%
Students who received more than 50 hours of assistance	15	4.7%	100%

Table 1.1. *Annual hourly volume of assistance provided by specialist teachers (30 weeks) (Viriot-Goeldel 2017a)*

The assistance by specialist teachers in France offers struggling students an hourly volume of assistance – 20 hours on average – much lower than the North American systems whose effectiveness has been validated by research. The data collected in France as part of the "beginning reading and writing" study make it possible to extend this observation to the help provided by specialist teachers or by classroom teachers in the context of complementary educational activities. It appears that the French systems offer fewer learning opportunities (Piquée and Viriot-Goeldel 2016) than the North American intervention programs, whose effectiveness has been validated by research.

1.4.2. *Allocating existing resources to struggling students*

In France, the "beginning reading and writing" study made it possible to analyze how students benefit from the different support systems (Piquée and Viriot-Goeldel 2016). It examines the situation of 383 students (15.3% of the total sample) who had the lowest performance at the beginning of first grade, i.e. lower than one standard

deviation below the average. The results obtained question the adequacy of the assistance provided to the pupils. If we take the example of the help provided by specialist teachers (Teacher E):

– 61% of the weakest students do not receive help from specialist teachers;

– 19% of students with a higher level than the latter benefit from it.

The study also examines the very low participation of students in the three types of assistance available (Teacher E, Teacher G and assistance from complementary educational activities). It shows that 30% of the weakest students did not receive any help from the school, either from the complementary educational activities or from a specialist teacher (Teachers E and G combined) (Piquée and Viriot-Goeldel 2016). This study thus reveals the extent of the inadequacy of the initial level of students and the assistance they receive.

As a result, according to this study, the weakest students are not systematically those who receive this type of assistance. This may be explained by the fact that, in the absence of institutional criteria for receiving specialized assistance, the allocation of assistance depends on teachers' choices and districts' resources.

1.4.3. *The content of assistance measures*

The participation of the weakest pupils in these various assistance measures alone cannot guarantee their progress: they must also be able to benefit from learning content that meets their needs and that is in line with the knowledge produced by research in this field. However, there is little information available on what is taught in these interventions for pupils with difficulties in France. On the one hand, this is because institutional sources do not impose content on specialist teachers – the curricula are the same for all pupils – or specific methods – teachers have pedagogical freedom – or the evaluation of results. On the other hand, even though some indications have been identified by Lescouarch (2006, 2007) and Viriot-Goeldel (2006), research on the content of support provided by specialist teachers is relatively rare in France; conversely, a significant number of support systems in the United States adopt highly documented "off-the-shelf" programs whose effects on student performance are systematically evaluated by research (Viriot-Goeldel 2011, 2017b).

With regard to research on learning to read, several French teams have recently experimented with teaching contents (materials and methods) that constitute potential resources for assistive measures. For example, concerning the identification of written words, the EVALIRE system (Leclercq *et al.* 2015) thus implements sessions on reading and writing syllables based on syllabic impregnation

(Garnier-Lasek, 2002) and fluency sessions (Lequette *et al.* 2011) with pupils with difficulties. Several experiments with measures to prevent reading difficulties – and not to help pupils with difficulties – have used a series of materials devoted to training phonological awareness (Jacquier-Roux and Zorman 1998; Lambert and Doyen 2005), comprehension (Bianco *et al.* 2002, 2005) and fluency (Lequette *et al.* 2011) (see, for example, the research by Bianco *et al.* 2012; Gentaz 2013; Ecalle *et al.* 2019). The results outline many promising avenues for helping apprentice readers having difficulties. It would be appropriate to continue this descriptive and experimental work on the content of measures to assist French-speaking learners with difficulties in conjunction with the international literature on the subject (Viriot-Goeldel 2007).

1.4.4. *Outsourcing assistance: a major trend in France*

In recent years, several qualitative studies have pointed to what appears to be a specific French feature: the widespread use of speech therapists to help students with reading difficulties (Viriot-Goeldel 2007; Garcia 2013). The study conducted as part of "beginning reading and writing" made it possible to quantify this phenomenon on the basis of declarative data. One-third of the weakest students are followed by a speech therapist during their first grade year for varying lengths of time. This is also the case for 15% of weak students. Half of the students who consulted a speech-language pathologist during the year never saw a specialist teacher. In other words, there was no attempt to provide them with specialized pedagogical assistance in the school setting before outsourcing their monitoring. For the others, speech therapy assistance is in addition to school support (Piquée and Viriot-Goeldel 2016). The situation is markedly different from other school systems, such as in the United States and Canada, where the choice was made to provide reading aids mainly within the school.

The considerable importance of reading assistance provided by a paramedical profession – their training is under the responsibility of the Faculty of Medicine and consultations are reimbursed by health insurance – is first of all the result of a historical development. It also reveals a tendency to consider difficulties caused by social, linguistic and cultural environment as a medical problem.

However, if this evolution could take on the proportions observed in this study, it is undoubtedly because there were also needs that were not met by existing educational systems, on the one hand, and interactions that encouraged families to seek this assistance, on the other hand. It would also be useful to explore to what extent teachers themselves are the prescribers of this external support outside the school context. We can legitimately wonder about the consequences of this transfer of support to pupils in difficulty both in terms of educational continuity – speech-

language pathologists do not share the same conception of reading and, consequently, the same re-educational approach (Morel 2014) – and social inequalities – we understand the weight of parental involvement in such an approach (see, in particular, Morel 2012; Garcia 2013).

1.4.5. *Research on the organization of assistance*

The Piquée and Viriot-Goeldel study (Piquée and Viriot-Goeldel 2016) showed that 30% of the weakest students do not receive any help from the school, either from complementary education activities or from a specialist teacher. It also shows that many students assisted by one or the other of these systems receive only a small amount of support. Finally, students with better performance benefit from this type of monitoring, which raises the question of the distribution of aid within the school system. It is in this respect that the "response to intervention" opens up interesting perspectives.

Indeed, the response to intervention constitutes a reference framework, i.e. a framework for understanding the problem of educational difficulties and acting to eradicate them. This repository has generated a great deal of research on these issues in North America. It integrates the three dimensions of assistance: the detection of difficulties, the implementation of effective teaching practices in the regular classroom and, if necessary, the implementation of supplementary intervention articulated within the framework (Viriot-Goeldel 2006).

Based on the article by Fuchs and Fuchs (2006) and the definitions of the Center on Response to Intervention (2016) and the National Center for Learning Disabilities (2016), we propose the following definition.

The response to the intervention is first of all an interpretation framework – a response to academic difficulty based on how the student responds to the instruction provided. Academic difficulty is conceived as a lack of progress considered sufficient in a student. The response to the intervention is then an assistance procedure triggered as a result of an insufficient "response" from a student, who uses the assessment data to adjust the pedagogical action. It aims to integrate the student into successive intervention levels of increasing intensity implementing interventions validated by research. This procedure is intended to be adapted to different contexts. Because of its early and reactive nature, the response to the intervention can be considered a process of preventing academic difficulty.

The central idea of response to intervention is to propose different levels of assistance of increasing intensity, generally symbolized by a pyramid whose base represents what all students benefit from, and the top represents what a small part of

them benefit from. The number of these levels and their characterization varies according to the ways in which the response to intervention principle is operationalized. A regular evaluation allows the learner to be assessed in relation to his or her previous performance (this is the *response*) in order to assess the need for assistance and to adjust the proposed assistance.

While response to intervention generated an unprecedented wave of enthusiasm and hope when it arrived on the other side of the Atlantic more than 20 years ago, the time has now come to take stock of the progress made after two decades of experimentation. The introductory title of a special issue devoted to the assessment of response to intervention clearly shows the end of this euphoria faced with the impossibility of eradicating reading difficulties: "A Glass Half Full" (Chard 2012) or "Response to Intervention for Reading Difficulties in the Primary Grades: Some Answers and Lingering Questions" (Denton 2012). According to these authors, although the implementation of response to intervention makes it possible to improve the performance of a large number of pupils, it still leaves a small percentage of pupils behind – level 3 – who continue struggle despite efforts to help them. It seems that we still have too few ways to help these students. Moreover, in general, when interventions improve student performance, they do not always close the gap between these students and the norm, especially in the long term (Chard 2012). This "half full glass" is still ranked in Hattie's meta-analysis as the third most important success factor, allowing for "visibly" improved learning (Fisher *et al.* 2016). Finally, researchers and practitioners are continuing their investigative work to refine the proposed model so that it constitutes a viable and sustainable prevention tool within and outside the classroom (Fuchs and Vaughin 2012).

This reference framework therefore remains an interesting tool for understanding assistance in France. It highlights the gap between a randomly functioning system in which class and school play a major role in the allocation of aid, on the one hand, and a systematic process to allocate assistance in which the assessment of each person's academic level plays a key role, on the other hand. In addition, this framework opens up a number of perspectives in terms of evaluation – not only to identify, but also to constantly monitor progress in order to adjust pedagogical action – and content, thanks to a large number of scientific studies that have significantly advanced the knowledge associated with the field of assistance for learning to read.

1.5. Conclusion

With this synthesis, we wanted to "understand" assistance in the etymological sense of "taking together", i.e. first understanding the student's request for assistance, then the assistance as it is provided by the teacher within an ordinary class and finally the assistance as it is offered through interventions for struggling

students. Through these three aspects, the concept of assistance finally covers major current problems that question our French education system, the self-regulation process of the learner as well as the management of heterogeneity within the classroom.

Such a synthesis raises both praxeological and political challenges for improving the education system. It outlines the conditions for a teaching and pedagogical relationship conducive to the demand for self-regulated assistance, the effectiveness of the assistance provided and the pedagogical mechanisms proposed. It highlights the need for research on the needs of current learners for support, on the ordinary support practices of teachers and on the measures (digital or otherwise) that could help to eradicate learners' difficulties. Through international comparison, it shows the possibilities for improving our support systems and their organization.

In our French education system, where in recent decades there has been an increase in the number of pupils with a low performance and where performance is increasingly dependent on the social environment (Fumel *et al*. 2016), reflection on the concept of assistance can – must – constitute an input to this reflection on improving a system where personalized and/or instrumented learning (through reference systems and/or digital technology) can be questioned.

1.6. References

Bautier, É. (2005). L'adaptation des formes scolaires aux élèves : aide ou leurre ? In *Pratiques d'enseignement et difficultés d'apprentissage*, Talbot, L. (ed.). Érès, Toulouse, 145–156.

Bianco, M., Coda, M., and Gourgue, D. (2002). *Compréhension, grande section.* Éditions de la Cigale, Grenoble.

Bianco, M., Coda, M., Gourgue-Giollito, A., and Robert, A. (2005). *Compréhension*. Éditions de la Cigale, Grenoble.

Bianco, M., Pellenq, C., Lambert, E. *et al.* (2012). Impact of early code-skills and oral-comprehension training on reading achievement in first grade. *Journal of Research in Reading*, 35(4), 427–455.

Bressoux, P. (1994). Les recherches sur les effets-écoles et les effets-maîtres. *Revue française de pédagogie*, 108, 91–137.

Bruner, J. (1983). *Le développement de l'enfant. Savoir faire, savoir dire.* Retz, Paris.

Calarco, J. (2011). "I need help!" Social class and children's help-seeking in elementary school. *American Sociological Review*, 76(6), 862–882.

Center on response to intervention (2016). Glossary [Online]. Available at: http://www.rtinetwork.org/glossary.

Chard, D. (2012). A glass half full: A commentary on the special issue. *Journal of Learning Disabilities*, 45(3), 270–273.

Connor, C.M., Morrison, F.J., and Katch, E.L. (2004). Beyond the reading wars: The effect of classroom instruction by child interactions on early reading. *Scientific Studies of Reading*, 8(4), 305–336.

Connor, C.M., Morrison, F.J., Fishman, B., *et al.* (2007). The early years: Algorithm-guided individualized reading instruction. *Science*, 315(5811), 464–465.

Connor, C.M., Morrison, F.J., Fishman, B., *et al.* (2009). The ISI classroom observation system: Examining the literacy instruction provided to individual students. *Educational Researcher*, 38(2), 85–99.

Connor, C.M., Morrison, F.J., Fishman, B., *et al.* (2013). A longitudinal cluster-randomized controlled study on the accumulating effects of individualized literacy instruction on students' reading from first through third grade. *Psychological Science*, 24, 1408–1419.

Denton, C.A. (2012). Response to intervention for reading difficulties in the primary grades: Some answers and lingering questions. *Journal of Learning Disabilities*, 45(3), 232–243.

Descampe, S., Robin, F., Tremblay, P., and Rey, B. (2008). Étude des pratiques de remédiation et de pédagogie différenciée dans le cadre de la mise en place des cycles [Online]. Article de synthèse de la recherche en pédagogie n° 116/05, Université libre de Bruxelles, Brussels. Available at: http://www.enseignement.be/download.php?do_id=2675.

Duru-Bellat, M. (1996). De quelques effets pervers des pédagogies différenciées. *Éducations*, 7, 12–15.

Duru-Bellat, M., Mingat, A. (1997). La constitution des classes de niveau dans les collèges ; les effets pervers d'une pratique à visée égalisatrice. *Revue française de sociologie*, 38(4), 759–789.

Ecalle, J., Gomes, C., Auphan, P., *et al.* (2019). Effects of policy and educational interventions intended to reduce difficulties in literacy skills in grade. *Studies in Educational Evaluation*, 61, 12–20.

Elbaum, B., Vaughn, S., Hughes, M., and Moody, S. (2000). How effective are one-to-one tutoring programs in reading for elementary students at risk for reading failure? A meta-analysis of the intervention research. *Journal of Educational Psychology*, 92, 605–619.

Federici, R., Skaalvik, E., and Tangen, T. (2015). Students' perceptions of the goal structure in mathematics classrooms: Relations with goal orientations, mathematics anxiety, and help-seeking behavior. *International Education Studies*, 8(3), 146–158.

Fisher, D., Frey, N., and Hattie, J. (2016). *Visible Learning for Literacy*. Corwin, Thousand Oaks.

Fuchs, D., Fuchs, L.S. (2006). Introduction to responsiveness-to-intervention: What, why, and how valid is it? *Reading Research Quarterly*, 4, 93–99.

Fuchs, L., Vaughin, S. (2012). Responsiveness-to-intervention: A decade later. *Journal of learning disabilities*, 45(3), 195–203.

Fumel, S., Keskpaik, S., Salles, F., and Verlet, I. (2016). PISA 2015 : l'évolution des acquis des élèves de 15 ans en compréhension de l'écrit et en culture mathématique. Information note, DEPP, 38.

Garcia, S. (2013). *À l'école des dyslexiques. Combattre ou naturaliser l'échec scolaire.* La Découverte, Paris.

Garnier-Lasek, D. (2002). *L'imprégnation syllabique.* Ortho-Edition, Isbergues.

Gentaz, É., Sprenger-Charolles, L., Cole, P., *et al.* (2013). Évaluation quantitative d'un entraînement à la lecture à grande échelle pour des enfants de CP scolarisés en réseaux d'éducation prioritaire : apports et limites. *ANAÉ*, 123, 172–181.

Gersten, R., Compton, D., Connor, C.M., *et al.* (2008). Assisting students struggling with reading: Response to intervention and multitier intervention for reading in the primary grades. A practice guide [Online]. (NCEE 2009–4045), U.S. Department of Education, National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences, Washington. Available at: https://ies.ed.gov/ncee/wwc/PracticeGuide/3.

Goigoux, R. (ed.) (2016). Lire et écrire. Étude de l'influence des pratiques d'enseignement de la lecture et de l'écriture sur la qualité des premiers apprentissages [Online]. Research report, Institut français d'éducation, École normale supérieure, Université de Lyon, Lyon. Available at: http://ife.ens-lyon.fr/ife/recherche/lire-ecrire/rapport/rapport. English executive summary available at: http://ife.ens-lyon.fr/ife/recherche/lire-ecrire/lire-et-ecrire-en.pdf

Harn, B., Linan-Thompson, S., and Roberts, G. (2008). Intensifying instruction: Does additional instructional time make a difference for the most at-risk first graders? *Journal of Learning Disabilities*, 41(2), 115–125.

Huang, K., Law, V. (2018). Learners' engagement online in peer help. *American Journal of Distance Education*, 32(3), 177–189.

Ireson, J., Hallam, S., and Hurley, C. (2005). What are the effects of ability grouping on GCSE attainment? *British Educational Research Journal*, 31(4), 443–456.

Jacquier-Roux, A., Zorman, M. (1998). *Phonologie.* Éditions de la Cigale, Grenoble.

Karabenick, S.A., Newman, R.S. (2009). Seeking help: generalizable self-regulatory process and social-cultural barometer. In *Contemporary motivation research: From global to local perspectives*, Wosnitza, M., Karabenick, S.A., Efklides, A., Nenniger, P. (eds). Hogrefe & Huber Publishers, Ashland, 25–48.

Lambert, E., Doyen, A.L. (2005). *Phonoludos entrainement MS & GS.* Éditions de la Cigale, Grenoble.

Leclercq, V., Viriot-Goeldel, C., and Gallet, C. (2015). Les difficultés en lecture à l'école primaire : une prise en charge précoce et sur le long terme. *Développements*, 18–19, 109–135.

Leclercq, V., Viriot-Goeldel, C., and Gallet, C. (2016). Reading difficulties in primary school: early remediation. In *8th International Conference of Education, Research and Innovation*. IATED, Seville, 3195–3205.

Lequette, C., Pouget, G., and Zorman, M. (2011). *Fluence*. Éditions de la Cigale, Grenoble.

Lescouarch, L. (2006). Spécificité des pratiques pédagogiques des enseignants chargés d'aides spécialisées à dominante pédagogique (ASDP) en réseau d'aides spécialisées aux élèves en difficulté (RASED). PhD thesis, Université de Rouen, Rouen.

Lescouarch, L. (2007). Pratiques pédagogiques de la co-intervention des "maîtres E" en RASED. *Nouvelle Revue de l'Adaptation et de la Scolarisation*, 38, 169–177.

Mathes, P.G., Denton, C.C., Fletcher, J.M., *et al.* (2005). The effects of theoretically different instruction and student characteristics on the skills of struggling readers. *Reading Research Quarterly*, 40(2), 148–182.

Meece, J.L., Anderman, E.M., and Anderman, L.H. (2006). Classroom goal structure, student motivation, and academic achievement. *Annual Review of Psychology*, 57, 487–503.

Menesr (2013). Organisation du temps scolaire dans le premier degré et des activités pédagogiques complémentaires. Circular n° 2013-017 from February 6, 2013. *Bulletin officiel de l'Éducation nationale, de l'enseignement supérieur et de la recherche*, 6.

Menesr (2014). Fonctionnement des réseaux d'aides spécialisées aux élèves en difficulté (RASED) et missions des personnels qui y exercent. Circular n° 2014-107 from August 18. *Bulletin officiel de l'Éducation nationale*, 31.

Morel, S. (2012). Les professeurs des écoles et la psychologie. Les usages sociaux d'une science appliquée. *Sociétés contemporaines*, 85, 133–160.

Morel, S. (2014). *La médicalisation de l'échec scolaire*. La Dispute, Paris.

National Center for Learning Disabilities (2016). Response to Intervention (RTI) [Online]. Available at: https://rti4success.org/resources/mtssrti-glossary-terms#RTI.

Nelson-Le Gall, S. (1981). Help-seeking: an understudied problem-solving skill in children. *Developmental Review*, 1, 224–246.

Nelson-Le Gall, S. (1985). Help-seeking behavior in learning. *Review of Research in Education*, 12, 55–90.

Nelson-Le Gall, S. (2006). Peer acceptance and black children's help-seeking in school. *Negro Educational Review*, 57(1–2), 5–13.

Newman, R.S. (2000). Social influences on the development of children's adaptive help seeking: The role of parents, teachers, and peers. *Developmental Review*, 20, 350–404.

Newman, R.S. (2002). How self-regulated learners cope with academic difficulty: The role of adaptive help seeking. *Theory Into Practice*, 41(2), 132–138.

Nootens, P., Morin, M.-F., and Montesinos-Gelet, I. (2012). La différenciation pédagogique du point de vue d'enseignants québécois : quelles différences pour les pratiques d'enseignement en contexte d'entrée dans l'écrit ? *Revue canadienne de l'éducation*, 35(2), 268–284.

Piquée, C. (2007). Effets des pratiques à l'égard des élèves en difficulté au cours préparatoire. Dans *Actes du congrès international de l'actualité de la recherche en éducation et en formation (AREF)*. Strasbourg.

Piquée, C. (2010). Des classes à efficacité contrastée : quelles différences dans les pratiques enseignantes à l'égard des élèves en difficulté au cours préparatoire ? *Revue française de pédagogie*, 170, 43–60.

Piquée, C., Suchaut, B. (2004). Un maître supplémentaire dans la classe : quels effets sur les progressions au cycle III ? *Revue française de pédagogie*, 146, 91–103.

Piquée, C., Viriot-Goeldel, C. (2016). La fréquentation des dispositifs d'aide aux élèves en difficulté au cours préparatoire : un révélateur de l'organisation scolaire contemporaine. *Revue française de pédagogie*, 194, 47–70.

Puustinen, M. (2013). *La demande d'aide chez l'élève. Avancées conceptuelles, méthodologiques et nouvelles données*. L'Harmattan, Paris.

Puustinen, M., Rouet, J.-F. (2009). Learning with new technologies: Help seeking and information searching revisited. *Computers and Education*, 53, 1014–1019.

Puustinen, M., Volckaert-Legrier, O., Coquin, D., and Bernicot, J. (2009). An analysis of students' spontaneous computer-mediated help seeking: a step toward the design of ecologically valid supporting tools. *Computers and Education*, 53(4), 1040–1047.

Puustinen, M., Bernicot, J., and Bert-Erboul, A. (2011). Written computer-mediated requests for help by French-speaking students: An analysis of their forms and functions. *Learning and Instruction*, 21, 281–289.

Puzio, K., Colby, T. (2013). Cooperative learning and literacy: A meta-analytic review. *Journal of Research on Educational Effectiveness*, 6(4), 339–360.

Rochex, J.-Y., Crinon, J. (eds) (2011). *La construction des inégalités scolaires*. PUR, Rennes.

Rouet, J.-F., Puustinen, M. (2009). Introduction to "Learning with ICT: New perspectives on help seeking and information searching". *Computers & Education*, 53(4), 1011–1013.

Ryan, A., Gheen, M., and Midgley, C. (1998). Why do some students avoid asking for help? An examination of the interplay among students' academic efficacy, teachers' social-emotional role, and the classroom goal structure. *Journal of Educational Psychology*, 90(3), 528–535.

Ryan, A., Patrick, H., and Shim, S. (2005). Differential profiles of students identified by their teacher as having avoidant, appropriate, or dependent help-seeking tendencies in the classroom. *Journal of Educational Psychology*, 97(2), 275–285.

Shannon, D., Salisbury-Glennon, J., and Shores, M. (2012). Examining the relationships among classroom goal structure, achievement goal orientation, motivation and self-regulated learning for ethnically diverse learners. *Journal of Research in Education*, 22(2), 136–168.

Shim, S., Kiefer, S., and Wang, C. (2013). Help seeking among peers: The role of goal structure and peer climate. *The Journal of Educational Research*, 106(4), 290–300.

Slavin, R. (1987). Ability grouping and student achievement in elementary schools: A best-evidence synthesis. *Review of Educational Research*, 57(3), 293–336.

Slavin, R., Lake, C., Davis, S., and Madden, N. (2011). Effective programs for struggling readers: A best-evidence synthesis. *Educational Research Review*, 6, 1–26.

Snow, C., Burns, S., and Griffin, P. (eds) (1998). *Preventing reading difficulties in young children*. National Academy Press, Washington.

Stright, A., Neitzel, C., Sears, K., and Hoke-Sinex, L. (2001). Instruction begins in the home: relations between parental instruction and children's self-regulation in the classroom. *Journal of Educational Psychology*, 93(3), 456–466.

Suchaut, B. (1996). La gestion du temps à l'école maternelle et primaire : diversité des pratiques et effets sur les acquisitions des élèves. *L'année de la recherche en sciences de l'éducation, 1996, 123–153*.

Suchaut, B. (2015). Temps disponible et temps nécessaire pour apprendre à lire : le défi des 35 heures [Online]. Available at: http://www.cafepedagogique.net/lesdossiers/Pages/2015/2015_1_BSuchautTempsapprendrelire.aspx.

Taylor, B.M., Pearson, D.P., Clark, K.F., and Walpole, S. (2000). Effective schools and accomplished teachers: Lessons about primary-grade reading instruction in low-income school. *The Elementary School Journal*, 101(2), 121–165.

Torgesen, J.K. (2002). The prevention of reading difficulties. *Journal of School Psychology*, 40, 7–26.

Torgesen, J.K. (2004). Lessons learned from research on interventions for students who have difficulty learning to read. In *Voices of evidence in reading research*, McArdle, P., Chhabra, V. (eds). Paul H. Brookes, Baltimore, 355–382.

Toullec-Thery, M., Marlot, C. (2015). Rapport du comité national de suivi plus de maîtres que de classes [Online]. Available at: https://www. ladocumentationfrancaise.fr/var/storage/rapports-publics/154000708.pdf.

Vaughn, S., Hugues, M.T., Moody, S.W., and Elbaum, B. (2001). Instructional grouping for reading for students with LD: Implications for practice. *Intervention in School and Clinic*, 36(3), 131–137.

Vaughn, S., Denton, C., and Fletcher, J. (2010). Why intensive interventions are necessary for students with severe reading difficulties. *Psychology in the Schools*, 47(5), 432–444.

Viriot-Goeldel, C. (2006). Aider l'apprenti lecteur en difficulté à l'école primaire : une perspective comparée. PhD thesis, Université de Lyon II, Lyon.

Viriot-Goeldel, C. (2007). Apprentis-lecteurs en difficulté : quels types d'aide ? Essai d'analyse théorique et praxéologique de l'aide apportée aux élèves en difficulté dans les classes de l'enseignement primaire en France, au Québec et dans le Bade-Wurtemberg. *Carrefours de l'éducation*, 23, 25–38.

Viriot-Goeldel, C. (2011). Les programmes "clé en main" aux États-Unis : des modèles d'intervention pédagogique en réponse à la crise de l'école [Online]. In *Actes du colloque AECSE Crise et/en éducation*. UPO, Nanterre La Défense. Available at: https://www.researchgate.net/publication/292988311_Les_programmes_cle_en_main_aux _Etats-Unis_des_modeles_d%27intervention_pedagogique_en_reponse_a_la_crise_de_ l%27ecole.

Viriot-Goeldel, C. (2013). Prévenir l'illettrisme dès l'école primaire : analyse du cas français à la lumière de la comparaison internationale [Online]. *Cahiers de la recherche sur l'éducation et les savoirs*, 12, 59–70. Available at: https://journals.openedition. org/cres/2299.

Viriot-Goeldel, C. (2017a). Aider l'apprenti-lecteur en difficulté. Analyse du cas français à la lumière de la réponse à l'intervention. HDR summary, Université Paris 8, Paris.

Viriot-Goeldel, C. (2017b). Quelles sont les pratiques d'enseignement de la lecture-écriture au cours préparatoire favorables aux élèves les plus faibles ? Summary. *Repères*, 55, 227–245.

Wanzek, J., Vaughn, S. (2008). Response to varying amounts of time in reading intervention for students with low response to intervention. *Journal of Learning Disabilities*, 41, 126–142.

Weeb, N.M., Mastergeorge, A.M. (2003). Promoting effective helping behavior in peer-directed groups. *International Journal of Educational Research*, 39(1–2), 73–97.

2

"Accompaniment"[1] and/or Guiding to Support Professionalism: Ways of Overcoming the Paradox

2.1. Introduction

The actors involved in vocational training (Roger and Maubant 2011) frequently evolve in a paradoxical situation (Vialle 2005). On the one hand, their task is to support the development of the autonomy and responsibility of the person in training (Lemosse 1989) while, on the other hand, they aim to ensure that practices (Boltanski 2009) conform to a professional standard (Clot 1999) recognized as a standard of excellence.

In this chapter, we will show why the first situation is related to "accompaniment" that claims to be part of the learning paradigm, while the second is related to guidance that is characterized, for its part, closer to the teaching paradigm (Vial and Caparros-Mencacci 2007; Gremion and Maubant 2017).

After having defined and compared these two perspectives of the pedagogical relationship in a more traditional way, we will observe them using the *cube of evaluation modalities*. This model allows us to reflect on three essential constitutive dimensions of evaluation modalities by taking an interest in:

1 By "accompaniment", we mean a type of support which consists of walking beside the person in training, to follow them wherever their reflections take them, to support their reflections and analysis, without exercising either control or guidance.

– the actor of the evaluation – self-evaluation versus hetero-evaluation (Coen and Bélair 2015);

– the recipient of the information produced by the evaluation – internal versus external (Cardinet 1990);

– the frame of reference – fixed and expected versus open and debated (Figari 1994, p. 44).

These considerations will enable us to reflect on the possibilities of conceiving the "accompanier[2]-guider" dyad, no longer according to a Cartesian dialectic, which is somewhat sterile, but according to a dialogic which is more in search of complementarities. In order to do this, we will revisit nine articles published in the journal *Phronesis* (issue 4, volume 6), focusing on evaluation and support in practice analysis systems.

Based on the results of this research, we will first highlight the tensions that these two positions can cause in the professionalization process, before showing that the tensions identified are not caused by this "guider-accompanier" opposition alone and that they are also strongly linked to the actors and recipients of the evaluation, whether they are internal or external.

Finally, we will propose a model likely to reduce the paradoxical injunction given to learners: the compulsory autonomy of practitioners and their voluntary contributions to the normalization of their actions (Maulini and Vincent 2014).

2.2. Problem and theoretical framework

In vocational training (Roger and Maubant 2011), teachers, trainers and supervisors generally evolve in a paradoxical situation (Vialle 2005). Indeed, the very concepts of training and professionalization are being debated.

Behind the term *professionalization* is the desire to allow the person to "reflect in depth on their learning [and] to identify the skills and their levels of appropriation" of the different situations encountered (Jorro 2016, p. 44). As a result, vocational training attempts to develop autonomy, self-assessment and the ability to analyze one's practice in order to develop it. Naturally, we are talking here about the professionalization of people, which Wittorski (2014) identifies as "training-professionalization", in contrast with "profession-professionalization", which works towards the social recognition of a profession, or towards "work professionalization-effectiveness", which seeks to make work and individuals more

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2 "Accompanier" refers to the action of using "accompaniment".

flexible in order for them to better meet the competitiveness needs of companies. Conflicting definitions can make it difficult to find one's bearings, since a company's quest for productivity may seem far from the emancipation of the individual through the development of their style and professional ethos. We will, of course, retain this last definition in the rest of this chapter.

Behind the term *training*, which is also highly polysemic, is the very general meaning: "enable to reach the form, make happen. Too often confused with giving a form. We're forming ourselves. We are not forming anyone" (Vial 2014). In vocational training, the "form" represents the professional standard, the norm shared by the corporate body and/or expected by society.

The paradoxical injunction given to the trainee can thus be summed up in this double requirement: compulsory autonomy of practitioners and voluntary contribution to the normalization of their actions (Maulini and Vincent 2014). This is a paradoxical injunction addressed to the person undergoing training, but which also affects teachers, trainers and supervisors involved in the implementation of these training courses. On the one hand, to enable the professionalization of people, their task is to support the development of the autonomy and responsibility of trainees (Lemosse 1989) by actively involving them in the analysis of their practice to become aware of their professional style, while on the other hand, they aim to achieve conformity, the compliance of practices (Boltanski 2009) to a professional standard (Clot 1999) recognized as a standard of excellence, but sometimes also as a formula to be applied.

2.2.1. *Support or guidance*

In the literature on assistance or support practices, these two forms of training perspectives can be identified. The first refers to professional "accompaniment" (Vial and Caparros-Mencacci 2007) or reflective companionship (Donnay and Charlier 2008). In this perspective, "accompaniers[3]" walk with trainees, follow them where their reflections and analyses lead them, just behind them. The second refers to what Paul (2002) groups together as mentoring, with the counselor or guide being two emblematic figures. To use the image of the path, the guide[4] generally walks ahead, because he/she knows the way to follow.

Accompanying learners means walking behind them at the pace of the situations they are experiencing, at the pace of their learning. But what predictability can there

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3 "Accompanier" refers to the person who "accompanies".

4 Guidance and guide are the terms we will use in the rest of the text for this form of scaffolding.

be that situation X leads to learning Y in person Z? Accompanying requires respecting these different rhythms and, by extension, allowing space for informal and personal learning in often very formal and standardized systems (Roger and Maubant 2018). Accompanying is thus clearly part of the learning paradigm.

Guiding the learner reveals itself to be more difficult because learning, as we have just seen, is individual and unpredictable. Guiding is walking ahead because the guide knows where he/she wants to go. The destination is defined by a curriculum made up of more or less restrictive guidelines.

> The training program therefore explicitly aims to achieve objectives. It consists of stages, of which the sequence is linear, chronological, with a cumulative effect, tied to each other, each of which must produce an expected effect, and not of phases, which are consubstantially interdependent and which have meaning only in relation to each other (Vial 2005). As formulated in the reference framework, these criteria are part of a training project in which compliance with a program is valued in order to achieve objectives. (Guillemot 2017, p. 34)

Even though all study plans are not always as binding as these authors tell us in this excerpt, it is nevertheless true that guiding is part of the teaching paradigm (Vial and Caparros-Mencacci 2007; Gremion and Maubant 2017).

In the research that serves as a corpus to this chapter, some authors also position themselves through the definitions they give to these two perspectives. For Fristalon, "accompaniment" is "a developmental approach free of prescriptive expectations" (Fristalon 2017, p. 45). It should be noted that, for this author whose epistemological posture is colored by the analysis of French activity and ergonomics, prescription and expectation are also put in conflict with the developmental dimension. As for Vacher (2017, p. 115), he is interested in a group accompaniment system in which practice analysis is used as a source of learning. He identifies four recurring and structuring dimensions for the implementation of such mechanisms: the autonomy of the actor, the social dimension of the process, the ethical component of the process, and finally the unpredictability of the dynamics and its objects. Here again, unpredictability and autonomy place "accompaniment" in the learning paradigm, centered on the learner through the autonomy attributed to them and centered on the specific rhythm of learning, defined as unpredictable.

The reality on the ground means that trainers often find themselves with these two tasks: to guide learners towards the expected standard and to accompany them in the construction of their professional identity by promoting their emerging professionality (Jorro 2014). Some authors do not see this dual mission as problematic. For André (2017), these two perspectives are complementary and the

difficulties encountered have their origin in the absence of a stable reference framework, which makes the examination perspective uncomfortable. For Portelance and Caron (2017), this complementarity is shared, but the difficulties come from elsewhere: "Evaluation practices centered on examination and certification" (p. 96). Guillemot, in turn, stresses that the trainers, even though they have to take on these two tasks, do not provide "accompaniment". They guide and sometimes use accompanying acts to this end:

> Previous studies have shown that trainers have integrated this dual expectation with a hierarchy between guidance and "accompaniment" in their practice: "if they are obliged to guide towards the acquisition of knowledge and to accompany during this acquisition" (Guillemot and Vial 2009, p. 98), "accompaniment" is not played out in equal parts with guidance in the profession of trainers; the moments of "accompaniment", to the benefit of the learner, are carried out during a training program, by the same professional, in the same place and under the same contract. (Guillemot and Vial 2013, p. 136; Guillemot 2017, p. 37)

Whether one emphasizes the need for a reference framework, the absence of quantified measures or the guidance towards an expected standard, it is interesting to note that the vocabulary used to differentiate "accompaniment" and guidance is strongly linked to the one used to talk about the two evaluation logics: evaluation-development and evaluation-examination (Vial and Caparros-Mencacci 2007; Gremion and Maubant 2017).

The comparison between these two practices of assistance or support and the world of evaluation does not stop there. To present it and attempt to refine the existing convergences and divergences between "accompaniment" and guidance, we use a representation that we call a *cube of evaluation modalities* (Figure 2.1). The three dimensions of this cube are constituted by:

– the evaluation frame of reference: is the standard fixed and expected (standardization) or is it chosen and/or debated (development)? As guidance is related to normalization whereas development is associated with "accompaniment", as we have seen above;

– the actor of the evaluation: is the evaluation carried out by the learner themselves (internal) or by a third person (external)? Self-evaluation and hetero-evaluation can be considered here to be synonyms of internal and external when we talk about the actor;

– the recipient of the assessment: is the information produced intended for learners themselves (internal) or for a third person (external)?
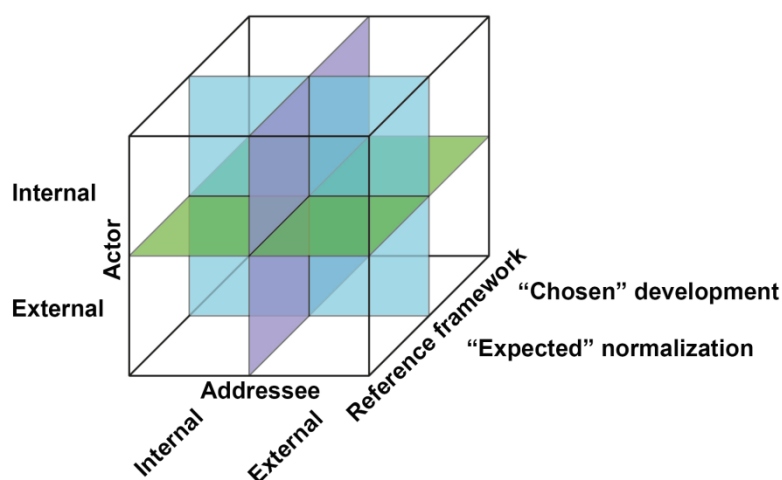
Figure 2.1. *Cube of evaluation modalities, For a color version of the figure,
see www.iste.co.uk/pelissier/education.zip*

2.2.2. *The "reference framework" dimension of the evaluation*

The definitions of "accompaniment" and guidance are largely based on the nature of the referents composing the reference framework and supporting the proposed assistance or support. Whether one follows or leads gives important information. Does the person in charge of the support know where they want to go, and do they guide towards this goal or objective or, on the contrary, follow the person being accompanied in the identification or definition of their own objectives?

For the person being accompanied as well, this dimension significantly modifies the position adopted. Boltanski speaks of two forms of reflexivity at the heart of the empowerment process: confirmation and criticism (Boltanski 2009, pp. 152–156). In confirmation, the accompanied person tries to meet the expected standard. "What matters is only that he does what is expected of him in the prescribed forms, so that it can be done and done well" (Boltanski 2009, p. 154). This is a common position taken by many students who would like to receive "recipe norms" (Vacher 2017, p. 117) from their guides or trainers. The danger of confirmation is therefore present in the reduced indication of reflexivity shown by individuals, applying a standard dictated by a reflexivity recognized by the measure or institution. Commitment, personal responsibility and autonomy are not intended to be developed, which runs counter to the intentions of vocational training. In criticism, reflexivity takes a very personal form. "The critical actor is defined by this specific form of 'lucidity'. It is this lucidity that gives him the strength to question institutionally confirmed truths and truths of shared sense" (Boltanski 2009, p. 152). This is the position that

the "accompanier" tries to provoke in the accompanied person, to adopt a critical look at their habits and allow a transformation of their practices (Perrenoud 2001). The danger of criticism, according to Boltanski, is that you find yourself alone with a very personal standard that no one approves of, running the risk that "your words and gestures [may] be disqualified as eccentricity or madness (paranoia)" (Boltanski 2009, p. 152).

Forms of reflexivity, through confirmation and criticism, are necessary and one cannot be achieved without the other. The tension between accompanying and guiding no longer exists when one leaves the training register (external) and takes interest in identity-building or professional (internal) development, a complementarity that we also find in the standard represented by the professional type, in the adaptation or even transgression of the professional style (Clot 1999). The distancing and debate of the type and of one's own style, confronted with the values of the individual and the profession, enable people to develop their professional ethos, which is the constitutive and central dimension of their professionalization.

It is important to note that, if normalization through guidance and development through "accompaniment" are regularly presented as dialectical, when one leaves the teaching paradigm to situate oneself in the learning paradigm, dialectic disappears to give way to dialog, here between reflexivity through confirmation and reflexivity through criticism. It will be interesting to see whether, in the other two dimensions of the *cube of evaluation modalities*, this necessary complementarity is also found.

2.2.3. *The "actor" dimension of evaluation*

Between "accompaniment" and guidance, the actor of the evaluation differs. Who conducts the evaluation? If the evaluation is external, it is referred to as hetero-evaluation. This is the most frequent case in the training system in general, in the teaching paradigm and therefore in guidance. To take up the image of the path again, the guide walks ahead, assesses the difficulties and, on this basis, makes decisions. In this case, evaluation is often seen as the goal, objective or purpose of the training, which will be monitored to ensure that it corresponds to a norm. If the evaluation is internal, it is referred to as self-evaluation. The learner takes a critical look at their own learning, skills or background, and this information will enable them to take a stand and self-regulate. This is the learning paradigm and this evaluative form is often seen as a means of training and development. However, it is not that straightforward.

Between self-evaluation *sensu stricto*, which is carried out alone, and hetero-evaluation, which is carried out by a person (or machine) external to the learning itself, there are mixed modes of evaluation that involve several actors in

evaluation. Co-evaluation will be defined as when the trainer and learner take an appreciative look at learning or a practice (Allal 1999), and mutual evaluation as when two learners share their points of view.

The situation of co-evaluation, or socialized evaluation in general, is not easy to manage. A first intention is to allow the trainee to become aware of their strengths and challenges. But self-evaluation requires maintaining distance and taking into account different referents, changing points of view or, in the view of these authors (Campanale *et al.* 2010, p. 194), allowing oneself to take a step back. The external view, whether from the guide or the "accompanier", is thus used to help keep this distance and represent other points of view, a good idea that carries a significant risk, that of social desirability. Will those assessing themselves do so by adopting a critical posture towards their learning/practice and referents that can be mobilized, or will they do so rather by seeking confirmation, a conformity between their learning/practice and the socially recognized norm, as established by the training institution or its representative, in this case the "accompanier" or guide (Gremion 2017)? As we can see, self-evaluation and hetero-evaluation naturally refer to the first dimension presented and to the notion of a fixed or debated reference framework.

Finally, it should be noted that the evaluation actor generally differs according to the function of the evaluation. Self-evaluation will frequently be used in constructive or formative[5] evaluations, while hetero-evaluation is generally preferred for certification and examination. Once again, a dialectic seems to be emerging in the teaching paradigm. In the learning paradigm, the balance seems different and a dialogical approach is established for the trainee between self-evaluation for comprehension purposes using critical reflexivity and self-control for normative purposes using reflexivity through confirmation.

2.2.4. *The "recipient" dimension of the evaluation*

After the actor, the one who produces the evaluation, let us now talk about the recipient, the one who uses the information produced.

It would be natural to think that if the self-assessment is produced by the learner, he or she will be the user of the resulting data and that, on the contrary, if the hetero-assessment is produced by a trainer, the data will be intended for them. These are indeed the most frequent cases in the field of training. However, let us take two brief examples to complete this and make it a little more complex:

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5 By "constructive", we mean gathering information to enable learning by/for the trainee. By "formative", we mean gathering information to organize teaching mainly by/for the trainer.

– when the student self-assesses their learning/practice to write a report, and this report is used by their trainer to determine whether or not to validate an internship, the self-assessment (internal) is intended for validation (external). This is a case that can be found in evaluation portfolio and presentation approaches (Petit *et al.* 2018);

– when the trainer evaluates learning/practices and gives feedback to enable the student to steer the continuation of their learning, the hetero-evaluation (external) is intended for (internal) learning. This is a case that is generally found in the formative evaluation.

"Accompaniers" and guides use the data from their evaluations for learners themselves. In this sense, they share the desire to support development and learning. However, they diverge in terms of the reference framework seen as "expected" from the training. The guide uses an existing reference framework that serves as a comparison between the "observed" and the "expected". As this "expected" is not debated, it remains external to the learner. The "accompanier" invites the learner to question the "expected" and their own value system. They promote the process of renormalization (Schwartz 2007). This new reference framework becomes an internal element of the learner.

Once again, internal or external frames of reference seem to be opposed in this dialectical movement if they are thought of within the "external" paradigm of teaching. The same opposition becomes dialogical in the "internal" paradigm of learning. When the student decides to share data from their self-assessment to seek help or advice from their "accompanier" or guide, the biases previously identified in the socialized assessment disappear.

In *Ego, pour une sociologie de l'individu*, Kaufmann (2001) develops the existing complementary relationship between individual reflexivity (IR) – what I think I should do in this situation – and social reflexivity (SR) – what I think others think I should do in this situation. By focusing on the individual, the theory he proposes is *de facto* part of the learning paradigm and highlights that, from this point of view, the three dimensions of the model we have just proposed can work together without necessarily opposing each other. "What I think I should do" refers to an internal (recipient) self-assessment (actor) in relation to a choice of action (frame of reference). We are fully in the field of reflexivity through criticism proposed by Boltanski and the professional style presented by Clot. But as we have seen, this position alone can lead to eccentricity or madness (Boltanski 2009, p. 152). "What I think others think I should do" refers to imagining a hetero-evaluation (actor) with an external focus (recipient) in relation to an expected action (frame of reference). Here again, this unique positioning carries a risk, that of replacing reflection through the systematic application of the norm imposed by the professional standard. The dialog between individual and collective reflexivities allows the socialization of

the individual (Kaufmann 2001), just as the dialog between type and professional style allows the development of the professional ethos (Jorro 2016).

By confronting this theoretical model with various experiences in the field, we wish to explore the possibilities of designing the "accompanier-guide" dyad no longer according to a Cartesian dialectic which is somewhat sterile, but according to a dialogic more in search of complementarities and dialogs.

2.3. Methodology: description of the analyzed corpus

To carry out this exploration, we used nine scientific articles from the journal *Phronesis*[6]. This research is based on a total of 248 assessments of teacher internships in initial training, 51 (comprehensive) research interviews, three "accompaniment" interviews and 20 self-confrontation interviews. The content of each article was analyzed in three steps:

1. identification, in the articles, of the respondents' verbatim comments and the authors' comments and analyses as to the possibilities and difficulties of articulating the differences between evaluation and support in the practice analysis mechanisms presented;

2. categorization of data according to the three dimensions of the *cube of evaluation modalities*: analysis of data to understand the reasons for the success or failure of the desired design;

3. grouping the analyzed data into emerging sub-categories to structure the presentation.

Very briefly, these nine articles are presented below by the arguments or question they address:

– André (2017) highlights the difficulties encountered by field trainers when evaluating interns. He hypothesizes that the difficulty comes more from the absence of a framework than from a mixture of roles between support and evaluation and control.

– Tominska, Dobrowolska and Balslev (2017) analyzed the interviews that took place during the internships between the field trainer, the university trainer and the intern. They propose a discursive analysis enabling the different modes of evaluation to be put in relation with the evolution of interactive dynamics.

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6 From No. 4, Volume 6, issue following the symposium of the 28th Admee-Europe colloquium in Lisbon, with the theme of "Supported learning and evaluation… a duo in unstable balance?"

– Guillemot (2017) focuses on the reference texts governing the activity of adult trainers. She highlights the paradoxical injunction made to them – to "accompany" learners on their journeys, but to do so while respecting the stages previously planned – and shows, through a case study, the risks involved in moving from a posture of "accompaniment" to a guiding posture.

– Fristalon (2017) presents a training system centered on the analysis of activity and entirely free of any prescriptive expectations, based on confrontation with one's own practice, "self-recognition" and renormalization, which allows the author to question the place of examination in training systems.

– Boucenna (2017) proposes an unconventional methodology. After filming a support-based interview, the "accompanier" and the "accompanied" participate in a self-confrontation interview in order to question the relationship in the acts of "accompaniment". Does "being at the disposal of" of the "accompanied" necessarily imply a symmetrical relationship between the actors?

– Zinguinian and André (2017) show that some field trainers feel trapped between two perspectives: to serve the needs of students or to train and evaluate them according to the institute's expectations.

– Gremion (2017) proposes a strategic and systemic analysis of a problematic situation of "accompaniment". This case makes it possible to question the aims of the system of "accompaniment", the distribution of the different roles within it and the purpose of the evaluation.

– Portelance and Caron (2017) present a system of "accompaniment" to develop the students' willingness to improve their initiative, authenticity, autonomy and reflective attitude. However, they note the negative effect of evaluations with grades.

– Finally, Vacher (2017) presents a system for analyzing professional practices. The system seems to achieve its professionalization goals until it becomes mandatory and is part of the certification evaluation of the training.

2.4. Results

The results of our text analysis show that the "accompaniment" or guiding perspectives and the three dimensions of the *cube of evaluation modalities* are found to be, as facilitating elements or obstacles to professionalization, in each of the works of research presented. Below we present some significant elements or extracts that we will discuss later.

2.4.1. *"Accompaniment" or guidance*

The two postures are regularly discussed in the articles analyzed. Three scenarios then arise.

First, some articles refer to measures in which trainers take on or are assigned guidance functions. The aim seems pretty clear to all stakeholders. However, André (2017) notes that field trainers only rarely indicate failure in internships, certainly because of the proximity that is created between trainer and intern. Portelance and Caron (2017) hypothesize that, even in this guiding position, abandoning evaluation and monitoring using grades would allow for better student engagement, and Zinguinian and André (2017) note that making an evaluative judgment on the intern's practice is a "dirty job" for the field trainer.

Moving to the second case: two articles present measures in which the trainer only has an "accompaniment" task. In Fristalon (2017), the "accompanier" and the "accompanied" do not seem to encounter any difficulty and the relationship is described as very symmetrical, but the article makes no mention of the certification evaluation at the end of the training. For Boucenna (2017), the "accompaniment" relationship is described as rather asymmetrical but not very effective: "We also note that both forms of 'accompaniment' lead to dead ends. In both cases, the 'accompanier' eventually withdraws from the exchange, listens and no longer intervenes, convinced that his interventions will not affect the other."

Finally, in the third case, articles present devices in which the two perspectives overlap and seem to cause more of a problem. Gremion (2017) describes the difficulties of a system that requires the trainer to accompany a person in training for three years and then become their evaluator at the end of the course. If the change of position seems clear to the trainer, the "accompanied" does not necessarily take it so smoothly. Vacher (2017) highlights the necessary conditions for successful "accompaniment": non-judgmental, safe and voluntary. Conditions that are not always in line with institutional expectations, such as mandatory participation, certification for credits or the use of grades to communicate the assessment, result.

These elements show us that both perspectives, "accompaniment" and guidance, have positive and interesting effects as long as they are clearly defined and, it seems, carried out by different people. In this respect, the nine articles seem to confirm the results of Vial's work (2006, 2007). The trainer who is involved in a training course is *de facto* associated with the training certification system. The trainer–trained relationship is colored by the usual asymmetry of the pedagogical relationship. In seeking symmetry in "accompaniment", the trainer or system should maintain some distance from the certifying function of the evaluation. On the contrary, by

seeking asymmetry in guidance, the trainer or system should distance itself from the friendly criticism function of the "accompanier".

Wanting to spare both is a complicated task for a trainer who must accompany, because "'accompaniment' is provided to the 'accompanied' to accompany them where [the trainer] has chosen to go, here towards certification" (Guillemot 2017, p. 40). As a result, very often, when trainers think they are accompanying, they are guiding, because "certification is the goal. To do this, the examination perspective remains important" (Guillemot 2017, p. 40). Tominska *et al.* will refer to "this delicate triple task" which falls to the T and S trainers[7] in a joint and moving way according to the different phases of the training supervision system, and which is placed between "accompanying, training and evaluating" (Tominska *et al.* 2017, p. 24).

2.4.2. *The "reference framework" dimension of the evaluation*

Depending on whether you are in guidance or "accompaniment", the reference framework will be perceived differently, as we have seen. For the articles we have analyzed, mainly relating to teacher training, an additional dimension appears: to guide, it is necessary to have a recognized norm or a professional standard shared by the various actors in the profession through an evaluative reference framework (Figari and Remaud 2014, p. 66). This is what André points out: "In schools, the weighting of students' performance is the subject of a conciliation between teachers, a determination of a scale. So many elements are not included in the evaluation of internships" (André 2017, p. 18). But does this norm really exist? Because between professionals in the field and professionals in training institutions, the norm used to define a "good teacher" is not always the same, between "someone who pulls the strings and applies them and "someone who develops a reflective position towards their practices", to mention only these two trends. A trainee teacher may find it difficult to locate, self-assess and demonstrate "autonomy as a prospective teacher during the internship" (Tominska *et al.* 2017, p. 26). The problem is different in "accompaniment" since the relationship to the norm is not the same, since the norm is not "expected", but rather something under construction. In this sense, two rationales for the relationship between norm and evaluation seem to be preferred:

> First, that of a positioning evaluation, in which it would be a question of knowing where the trained person stands in relation to values and not of giving a value to where the subject stands. The constructive and formative dimensions of the evaluation would thus correspond to a process of reporting on value and not to a judgment of value, a judgment that would correspond to an examination evaluation with

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7 University supervisors (S) and field trainers (T).

a certifying purpose. Secondly, the search for an understanding of the
foundations and causes of this positioning. (Vacher 2017, p. 117)

By observing the relationship to the norm and the expected, we note that a shift
from guidance to "accompaniment" seems possible when trust is established and the
"expected" seems achievable. For the "accompaniers", realizing "Annabelle's
'skills', whom she considers to be a sincere, capable and already autonomous
trainee, causes her to change her attitude, marking the 'letting go' of the classroom,
leaving Annabelle more room as a teacher" (Tominska *et al.* 2017, p. 27). This
framework of trust is necessary to allow the work of renormalization, the recognition
of which Fristalon speaks (2017, pp. 55–56) and which consists, for the person in
training, of taking a step back to compare their activity to the professional standard
considered expected.

This shift, which here seems to move towards "accompaniment" when
everything is going well (Tominska *et al.* 2017, p. 30), does not really seem possible
in the other direction. Moving from "accompaniment" to guidance is in a way
making a loss of confidence visible. When this trust is lost on the side of the
"accompanier", he or she finds himself at a dead end, "not only does the
'accompanier' not meet the 'accompanied' in his own challenges but he can no longer
follow him because he does not support his choices" (Boucenna 2017, p. 69). When it is
the "accompanied" who loses confidence in the "accompanier", the work of
co-evaluating the practice becomes difficult, as one trainee notes here: "The
asymmetry of the relationship must be reduced as much as possible in order to allow
learners to 'expose themselves', to let themselves be observed as they are" (Gremion
2017, p. 109).

Having to play one role and then another is thus experienced as difficult by the
trainers and as potentially violent by people in training.

2.4.3. *The "actor" dimension of evaluation*

Supporting a self-evaluation or carrying out a hetero-evaluation does not imply
the same distance between the trainer and the person in training. Proximity and a
certain symmetry are necessary for the trust-based relationship in "accompaniment".
Presenting one's practice and "exposing oneself", as we have just mentioned, requires
the "accompanier" to adopt friendly criticism (Jorro 2006), "neither adviser, nor
examiner, nor supervisor but rather this benevolent actor who contributes to creating
the conditions for the success of professional learning" (Maubant 2007, p. 45).

In the analysis of the texts, this right level of distance for "accompaniment"
seems to be found in the system presented by Fristalon, which allows "three

processes at work in this process: confrontation with activity, recognition of self by others and of self by self, and renormalization as creation or recreation of norms" (Fristalon 2017, p. 44) and in the one developed by Vacher, in which the respondents "all noted the need to embody these ethics in action by the facilitator, the only guarantee of building trust […] and transforming expectations" (Vacher 2017, pp. 125–126). Measures that clearly fit into the guidance of the teaching paradigm do not address the issue of distance much, except when it is a problem. According to André, the distance between the trainee and the field trainer is small, a condition that seems necessary for an authentic commitment in the relationship. It is at the end of the internship, at the time of the evaluation judgment, that the difficulties appear because the distance is no longer sufficient (André 2017, pp. 15–16). "The relational dimension also refers to the close relationship built between the field trainer and the trainee over the long duration of the internship" (Zinguinian and André 2017, p. 73).

As in the previous dimension, it would seem that self-evaluation requires more proximity to create a climate of trust, which becomes awkward for the trainer when making an evaluative judgment, especially if it is not very positive.

2.4.4. *The "recipient" dimension of the evaluation*

Is evaluation, whether internal or external, seen as a means of "realizing" and training or as a means of "being accountable" and meeting expectations in the various articles analyzed?

When the evaluation is seen in a training context, Portelance and Caron noted that:

> 1) The trainee's desire to improve concerns their desire to learn about and commitment to a process that is carried out without interruption; 2) authenticity in relation to their progress and challenges refers to the frank expression of observations related to the development of their skills; 3) reflexivity corresponds to reflective analysis of their practice, the self-questioning and justification of their didactic and pedagogical choices; 4) the professional autonomy revealed in their initiatives and in the management of their professional project. (Portelance and Caron 2017, pp. 90–91)

But these same authors note a "mixed professional commitment on the part of the intern, which we associate with the perspective of action of the relation towards evaluation. This representation of the evaluation appears in two sub-categories: the lack of initiatives by the trainee regarding their training project and the lack of reflection on their professional action" (Portelance and Caron 2017, pp. 92–93).

This rationale for action is related to the guiding posture while the training rationale is related to acts of "accompaniment", or at least to the absence of guiding gestures, as Vacher points out: "by securing the activity of each of the actors, participants can switch from an action rationale to a training rationale" (Vacher 2017, p. 118).

Certification, most clearly intended for external evaluation since it is regularly used to inform outside the established pedagogical relationship, becomes the "dirty work", work to be banned, delegated or shared (Zinguinian and André 2017). Whether a guide, trainer or expert evaluates and certifies, a practice is generally not a problem; however, in the case presented by Zinguinian and André, it seems that field trainers create, through the proximity and long duration of the internships, a relationship which is closer to "accompaniment" than guidance. And if supporting is mixed with evaluation to certify and to make accountable, "the phenomenon of comparison introduces an asymmetrical relationship colored by a certain symbolic violence caused by the claim of the 'accompanier' to know or feel 'in the place' of the other" (Boucenna 2017, p. 62). Knowing in the other's place does not invite one to think for oneself, to self-evaluate, but rather to justify or counter-argue. "Our hypothesis is that the director's dependence on the verdicts of the pedagogical advisor does not lead them to an exchange and sharing but invites them to measure their position in a power struggle" (Boucenna 2017, p. 62).

The texts analyzed allow us to see that if the recipient of the evaluation is external, as well as if the frame of reference is external, the commitment of the person in training is reduced and that their self-evaluation serves their reflective practice less than it serves their need for justification.

2.5. Discussion

The analysis of the results of these nine studies has enabled us to highlight the tensions that these two positions, "accompaniment" and guidance, can cause in the personal process of teacher training and professionalization. However, these two perspectives are not the only ones responsible for the difficulties observed on the ground when they must – and this is the case in any institution – coexist. We have seen that guiding, by being part of the teaching paradigm, means proposing an evaluation carried out by an external actor who takes a critical look at a practice by comparing it with a standard previously identified as good practice. This guiding perspective supports reflexivity through conformity, which is essential for the recognition of the professional standard. "Accompanying", by being part of the learning paradigm, means proposing an evaluation carried out by the trainee who takes a critical look at their practice by comparing it to a norm that they have identified and chosen. This "accompaniment" perspective supports reflexivity

through criticism, which is essential, in a perspective of professionalization, to the recognition of the professional style.

As Boltanski (2009) points out, these two forms of reflexivity are necessary for the socialization of the individual, but guidance helps to support compliance while "accompaniment" develops criticism. An essential complementarity in the professionalization process, these two reflective functions enter into dialog for the person in training and are two forms of assistance that are inappropriate for the same external facilitator to provide. This separation of tasks in the assistance or support provided to learners makes it possible to erase the paradoxical injunction given to learners that we presented in the introduction: the practitioner's compulsory autonomy and their imposed contribution to the normalization of their action (Maulini and Vincent 2014). Self-referentialization, the art of identifying oneself the frames of reference that define good practices while confronting them with the values and the ethics of the profession, coupled with self-evaluation and reflective practice thereby becomes the core of the work expected of the person in training, work in which he or she can be accompanied. The comparison between an established reference framework and the observed practice, through a hetero-evaluation allowing external communication, is at the heart of the guidance or expertise work.

"Accompanying" and guiding could thus be defined as two forms of evaluation, one used to "realize" and to train, and the other used to "being accountable" and to certify for external use. One cannot go without the other and both perspectives are necessary. However, it is only when things "go wrong" that we become aware that, for the person in training, living in these two situations with a single respondent is very uncomfortable, a real paradoxical injunction or even certain violence.

> In this regard, it is important to conduct similar research with the joint participation of trainees whose journey is difficult and their trainers. Analysis of the conversations between the associate teacher and the intern would lead to better knowledge of the role of the field trainer in reporting on the intern's evaluation. (Portelance and Caron 2017, p. 96)

If trainers can use acts of "accompaniment", they remain trainers, on the guide side. But:

> "Accompanying" is the opposite of guiding. There can be no practice that falls between the two opposites. It's either one or the other. To confuse them is to deprive trainers of the recognition of the intrinsic value of guidance, at the heart of the trainer's professional standard, and of the opportunity to develop their professional singularity of this standard, that is, to interpret. (Guillemot 2017, p. 41)

The elements presented lead to new questions that need to be discussed in vocational training schemes. We propose them below.

2.5.1. *Can a trainer from an institution be an "accompanier"?*

The question is a legitimate one. Indeed, if the trainer represents a norm and values in their courses, he or she can only be seen in guidance.

To be accepted as an "accompanier", he or she only represents the norms and values of the "accompanied", questions them and puts them to debate to allow the "accompanied" to question their actions in the light of their own standards and values. But will he or she forget the fact that, in class, the trainer represents very specific norms?

> The shift in the relation with the norm is also an important point for the social components of "accompaniment", because with this shift, the initial expectations towards the trainer representing the norm are transformed into exchanges around the norm and its variations (external, internal and co-constructed). (Vacher 2017, p. 126)

2.5.2. *Can a trainer from an institution be a guide?*

It seems that the answer is simpler because, as we have seen, training and guidance use the same norm and the same frame of reference. When Vial defines training as being "enabled to reach the form" (2014), the use of the qualifier "the", neither possessive nor indefinite, shows the external and expected dimension of the norm.

2.5.3. *Can an "accompaniment" system be compulsory in vocational training?*

But who am I to know what someone really needs? Being involved in an "accompaniment" system should be a choice: whether to be accompanied or not, the choice of the "accompanier", choice to stop the "accompaniment" when it no longer seems to help or no longer meets the expectations of the person in training. In Vacher's text, the disappearance of the choice even makes the "accompaniment" system disappear: "With this process, the module we studied in this article has been impacted. Initially it was no longer the subject of a choice (mandatory for all), and we were asked to carry out a certification evaluation as part of the final evaluation" (Vacher 2017, p. 128).

2.5.4. Can a guidance system be compulsory in vocational training?

We could answer in the same way. The obligation always refers to the idea that someone from outside decides what will be needed to do this or that learning process. In a training system that fully respects individuals, the only requirement should be to prove competence to obtain certification. The path necessary to build the skill or learning can be proposed, "accompanied" or guided, but it should not be imposed. However, the organization that such differentiation or individualization would require seems difficult, although not impossible, to achieve in the context of training groups of people. This difficulty encourages institutions to offer individualized training or mechanisms of "accompaniment".

2.5.5. *Can an "accompanier" or a guide be imposed?*

If, as proposed in the question in section 2.5.4, certification is imposed outside the training or "accompaniment" system, then we could imagine an ideal in which the choice of trainer or "accompanier" exists. Here too, it is the formal and collective aspects of training that make the enterprise complicated. We see it in in-service training: people enroll (or not) in this course because they need or want this material or because they want to take a course with this or that trainer and so on.

2.5.6. *Conducting a formative evaluation: an act of "accompaniment or guidance?*

Formative evaluation is used in different ways in the field. But whether it gives information to the learner to continue their training or gives information to the trainer to organize their teaching, it is always based on an external and expected norm. In this respect, formative evaluation is an act of guidance.

2.5.7. Is there a risk that "accompaniment" and/or guidance lead to de-professionalization?

We defined professionalization as the development of autonomy, self-assessment and reflexivity at the beginning of the chapter. In guidance, there is a direction to take. "If asked to diversify their teaching strategies, the intern can comply and 'vary for the sake of it' (Barioni and Puozzo 2014, p. 97), in order to succeed in their internship" (Portelance and Caron 2017, p. 88). In this respect, guidance does not develop either autonomy or the search for solutions. "Accompaniment" seems to support this search for a solution, but if it is imposed, it is difficult to argue that it really supports autonomy. In both cases, it is difficult to say that "accompaniment"

and guidance lead to de-professionalization; however, it is also not clear that they support it. In the introduction, we presented the paradoxical injunction given to learners: the obligatory autonomy of the practitioner and their voluntary contribution to the normalization of their action (Maulini and Vincent 2014). This double expectation is only paradoxical because it is the result of an (external) injunction, whereas the person who makes the (internal) choice to develop their autonomy and correspond to a professional standard sees no paradox in this.

2.6. Conclusion

On the basis of the nine research papers analyzed and the literature used, we have highlighted the complementarity of the two perspectives and the incompatibility of having them performed by the same person in the system. Complementarity is found when one is part of the learning paradigm and when "accompaniment" and/or guidance are chosen by the person in training, incompatibility in the teaching paradigm, which both "accompaniment" and guidance are part of, when they are imposed. Isn't it true that any help is welcome and useful if it is requested and negotiated?

The reflection carried out during the writing of this chapter leads us to other questions, perspectives for future research or simple sharing:

– "Accompanying": is this not ultimately to train-guide an individual to provide them with methodological tools so that he or she is able to support and guide himself or herself?

– Does the work of renormalization or self-referentialization not allow the person in training to transform the external expectation into a new internal expectation on which he or she can base both their reflexivity through confrontation and through criticism?

– Would positioning renormalization or self-referentialization as one of the aims of training be more conducive to professionalization than "mere" skills demonstrations?

– Self-evaluation and hetero-evaluation merge when the trainee is able to decentralize and distance himself or herself, thus exerting on himself or herself a new form of hetero self-evaluation?

– In vocational training, is there not ultimately only the official recognition of professionalism, which deserves to be an obligatory step for an emancipated actor to be able to accompany and guide himself or herself?

2.7. References

Allal, L. (1999). Impliquer l'apprenant dans le processus d'évaluation : promesses et pièges de l'auto-évaluation. In *L'évaluation des compétences et des processus cognitifs : modèles, pratiques et contextes*, Depover, C., Noël, B. (eds). De Boeck Université, Brussels, 35–56.

André, B. (2017). L'absence de cadre comme obstacle dans l'évaluation des stagiaires par les formateurs de terrain dans les formations à l'enseignement. *Phronesis*, 6(4), 11–21.

Boltanski, L. (2009). *De la critique : Précis de sociologie de l'émancipation*. Gallimard, Paris.

Boucenna, S. (2017). L'accompagnement : symétrie dans les asymétries ? *Phronesis*, 6(4), 60–70.

Campanale, F., Dejemeppe, X., Vanhulle, S., Saussez, F. (2010). Dispositifs d'auto-évaluation socialisée : une contrainte pervertissante ou une opportunité formatrice ? In *L'évaluation, levier du développement professionnel tensions, dispositifs, perspectives nouvelles*, Paquay, L., Van Nieuwenhoven, C., Wouters, P. (eds). De Boeck, Brussels, 193–205.

Cardinet, J. (1990). Évaluation externe, interne, ou négociée ? In *Hommage à Jean Cardinet*, Tschoumy, J.-A., Cardinet, J. (eds). IRDP/Delval, Cousset/ Neuchâtel, 139–157.

Clot, Y. (1999). *La fonction psychologique du travail*. PUF, Paris.

Coen, P.-F., Bélair, L.M. (2015). *Évaluation et auto-évaluation : quels espaces de formation ?* De Boeck Supérieur, Louvain-la-Neuve.

Donnay, J., Charlier, E. (2008). *Apprendre par l'analyse de pratiques : Initiation au compagnonnage réflexif*. Presses universitaires de Namur, Namur.

Figari, G. (1994). *Évaluer : quel référentiel ?* De Boeck, Brussels.

Figari, G., Remaud, D. (2014). *Méthodologie d'évaluation en éducation et formation*. De Boeck, Brussels.

Fristalon, I. (2017). Du processus de reconnaissance à l'évaluation de la pratique professionnelle. *Phronesis*, 6(4), 44–59.

Gremion, C. (2017). Place de l'accompagnement et du contrôle dans les dispositifs de formation en alternance. *Phronesis*, 6(4), 99–113.

Gremion, C., Maubant, P. (2017). Évaluation et étayage de l'analyse de pratique. *Phronesis*, 6(4), 1–10.

Guillemot, V. (2017). Des textes officiels à la pratique singulière, quelle posture pour un formateur en situation d'accompagner ? Étude de cas. *Phronesis*, 6(4), 33–43.

Jorro, A. (2006). Devenir ami critique. Avec quelles compétences et quels gestes professionnels. *Mesure et évaluation en éducation*, 29(1), 31–44.

Jorro, A. (2014). Professionnalité émergente. In *Dictionnaire des concepts de la professionnalisation*, Jorro, A. (ed.). De Boeck, Brussels, 241–244.

Jorro, A. (2016). De l'évaluation à la reconnaissance professionnelle en formation. *Revue française de pédagogie*, 190, 41–50.

Kaufmann, J.C. (2001). *Ego : pour une sociologie de l'individu*. Nathan, Paris.

Lemosse, M. (1989). Le "professionnalisme" des enseignants : le point de vue anglais. *Recherche et formation*, 1989, 55–66.

Maubant, P. (2007). Sens et usages de l'analyse des pratiques d'enseignement : entre conseil et accompagnement réflexif des enseignants en formation. *Les dossiers des sciences de l'éducation*, 18, 39–48.

Maulini, O., Vincent, V. (2014). Du travail réel aux pratiques souhaitées : rapport au savoir et rapport au devoir en formation des enseignants. In *Travail réel des enseignants et formation : Quelle référence au travail des enseignants dans les objectifs, les dispositifs et les pratiques ?*, Paquay, L. *et al.* (eds). De Boeck, Louvain-la-Neuve.

Paul, M. (2002). L'accompagnement : une nébuleuse. *Éducation permanente*, 4(153), 43–56.

Perrenoud, P. (2001). De la pratique réflexive au travail sur l'habitus. *Recherche & formation*, 36(1), 131–162.

Petit, M., Monney, N., and Gremion, C. (ed.). (2018). Enjeux et tensions de l'implantation et de l'utilisation du portfolio numérique en enseignement supérieur. *The Canadian Journal for the Scholarship of Teaching and Learning*, 9(3).

Portelance, L., Caron, J. (2017). Logique du stagiaire dans son rapport à l'évaluation. *Phronesis*, 6(4), 85–98.

Roger, L., Maubant, P. (2011). Les pratiques éducatives des enseignants : entre savoirs d'enseignement, savoirs d'expérience et savoirs professionnels. In *Enjeux de la place des savoirs dans les pratiques éducatives en contexte scolaire*, Maubant, P. (ed.). Presses de l'Université du Québec, Quebec, 213–241.

Roger, L., Maubant, P. (2018). Esquisse d'une évaluation délibérative et apprenante pour penser autrement l'alternance en formation. *Distances et médiations des savoirs*, 22.

Schwartz, Y. (2007). Un bref aperçu de l'histoire culturelle du concept d'activité. *Activités*, 4(2).

Tominska, E., Dobrowolska, D., and Balslev, K. (ed.). (2017). Interventions verbales des formateurs lors des entretiens de stage : entre l'évaluation formative et certificative. *Phronesis*, 6(4), 22–32.

Vacher, Y. (2017). Évaluation, norme et accompagnement : effets d'un dispositif de développement de l'analyse réflexive des professeurs stagiaires en enseignement. *Phronesis*, 6(4), 114–130.

Vial, M. (2005). Méthodologie de l'intervention. Comparaison. Groupe de recherche sur les pratiques d'accompagnement, UMR ADEF.

Vial, M. (2006). Accompagner n'est pas guider. In *Fondation pour les classes d'enseignement spécialisé de la Gruyère. Conférence aux formateurs de l'école de La Léchère*. Bulle.

Vial, M. (2014). Vocabulaire pour l'intervenant en ressources humaines [Online]. Available at: http://www.michelvial.com/vocabulaire_RH/Lexique_RE_MV_2014_Web.htm#_Toc 192943782 [Accessed October 1, 2015].

Vial, M., Caparros-Mencacci, N. (2007). *L'accompagnement professionnel ? Méthode à l'usage des praticiens exerçant une fonction éducative*. De Boeck, Brussels.

Vialle, F. (2005). *La construction paradoxale de l'autonomie en formations alternées*. L'Harmattan, Paris.

Wittorski, R. (2014). Professionnalisation. In *Dictionnaire des concepts de la professionnalisation*, Jorro, A. (ed.). De Boeck, Brussels, 233–236.

Zinguinian, M., André, B. (2017). Certifier les stagiaires : le "dur travail" voire le "sale boulot" du formateur en établissement scolaire. *Phronesis*, 6(4), 71–84.

PART 2

Specific Assistance Needs
for Particular Situations

Main Needs in Schooling Students with a Visual Impairment in Secondary Education: The Question of Digital Tools

3.1. Introduction

This chapter discusses the use of digital tools with lower secondary school students with a visual impairment (VI: blind and partially sighted) and their needs in mathematics and life and earth science courses. During research in three French lower secondary schools attended by young people with a VI, we observe that teachers have a number of needs to be fulfilled to enable them to teach these students and help them as best they can in building knowledge. At the same time, we observe that students have needs in these subjects. Therefore, this chapter aims to highlight the main needs which were declared by the participants (students, teachers, assistants[1]) involved in the process of including students with a VI when they use information and communication technologies in lower secondary schools. This chapter also aims to understand how teacher training can meet these needs.

Since the French law of February 11, 2005, "on equal rights and opportunities, participation and citizenship of people with disabilities", disability-related policies have promoted the schooling of students with disabilities in their local school. However, mainstream teachers who have students with a VI in their class are rarely trained to deal with this specific situation. In 2018–2019, 152,232 students (MENSR 2019)

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1 Teacher assistants work in French classes with students with disabilities or other disorders. They can be designated to work with one or more students in an inclusive setting. Some of them work in resource rooms (see Footnote 3).

with disabilities are enrolled in secondary education. Among them, there are 2,792 students with a VI. This number increases at a steady rate, with 665 more students than in 2013 (MENSR 2013).

From a scientific point of view, there is little research on assistance involving students with a visual impairment and even less research on these students' autonomy in learning (Gaborit *et al*. 2018). This research also includes the issue of digital tools for these students with special needs. Indeed, lower secondary school students are one of the most active populations in terms of the use of digital tools (Puustinen and Bernicot 2013). As such, these tools can be questioned regarding learning.

Other research shows that information search or the exchange of data via the use of digital tools can be facilitated (Amadieu and Tricot 2014). In addition, research by Sweller and his colleagues (2011) on the cognitive load associated with the different processes involved in learning makes it possible to discuss, for example, the impacts of digital tools on learners' cognitive activity.

As a result, we first introduce the question of digital technology in the school environment, both in terms of contributions and constraints, for example, effectiveness for learning and usability[2]. Secondly, we present the results of a survey. Based on interviews with students with a VI, mathematics and life and earth science teachers, teacher assistants and teachers for students with VI (TVI) from resource rooms[3], we believe we could identify the needs of these students. Thirdly, we compare this observation with the professional development as it is currently offered to teachers in France, and more specifically the training methods for teaching students with a VI when they use digital tools in class.

3.2. Inclusive schooling and ICT

Beyond the various past initiatives of the French Ministry of National Education to promote the use of digital technology in schools and local initiatives to fund digital

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2 The concept of usability corresponds to the 9241-11 standard on the ergonomics of human–system interaction and refers to the degree to which a product can be used, by identified users, to achieve defined goals with effectiveness, efficiency and satisfaction, in a specified context of use.

3 A resource room within a mainstream secondary (or elementary) school providing educational support to students with disabilities (here, VI) who attend lessons in their regular class and support to regular teachers. A TVI and an assistant ensure that learning material is adapted.

tools, the *digital plan for a school of confidence*[4] is in line with the law of February 11, 2005, in terms of equity, training and universal design.

3.2.1. *Digital technology in lower secondary schools*

From the beginning of the 2018 school year, the digital plan has aimed to develop and promote pedagogical effectiveness. Therefore, assessment tools are intended to help students "train, self-assess, take tests with adapted content to their levels and/or needs".

The Ministry's plan also copes with the issue of inclusive education[5]. In this respect, tools are proposed to facilitate "alternative access and use" of digital resources, the adaptations of which would be beneficial for all (with or without disabilities), in line with universal design.

In practice, an information and recommendation guidebook about accessibility and adaptability of digital resources for schools (A2RNE[6]) is provided to creators of digital resources. As far as they are concerned, fourth to ninth grade students are provided with a bank of educational digital resources.

Beyond the Ministry's ambitions in providing resources to develop students' skills and autonomy and in providing teachers with tools to facilitate their work and develop their professional development, a number of constraints need to be considered for these resources and tools to be effective.

In their research on self-regulated learning[7], Greene *et al*. (2011) highlight the importance of diversifying the multimedia formats of learning materials (texts, images, animations, videos, audio, etc.) for school tasks. On the one hand, this diversification makes it possible for the teachers to achieve more pedagogical objectives and, on the other hand, it facilitates learning and enables the students to engage in tasks.

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4 The *plan sur le numérique au service de l'école de la confiance* is a project presented by Jean-Michel Blanquer, French Minister of National Education, in August 2018. Presentation file available at: https://www.education.gouv.fr/cid133192/le-numerique-au-service-de-l-ecole-de-la-confiance.html.

5 The principle of inclusive education in France is enshrined in Act 2013-595 of July 8, 2013, law on school reform. It confirms the right of each child to be enrolled in their local school if the parents so request. The right was provided by the law of February 11, 2005. Pedagogical and technical support must be provided.

6 Last updated September 2018.

7 Zimmerman (2000) defines self-regulated learning as the learner's ability to dynamically control his/her cognitive, motivational, behavioral, emotional and contextual processes as they learn. It enables students to achieve autonomy in their learning.

Digital tools can therefore, in their view, be an aid to learning. For example, animations make it possible to reduce learners' cognitive load and make learning effective (Amadieu and Tricot 2014). However, it is necessary to guide them with learning strategies in using the animations. According to these authors, animations make it possible to show dynamic processes (e.g. movement) but do not have any particular effectiveness in understanding static information (e.g. the composition of a solute).

The diversification of multimedia formats raises the question of students' autonomy when using digital tools. This question is consistent with that of their knowledge. Yet, we have to be cautious regarding the preconceived idea that digital natives[8] could more easily and independently master digital tools at school. The required skills using digital tools for leisure (outside school) versus school tasks are different and not systematically transferable. While young people today are developing skills in using information sources such as Google and Wikipedia, they find it hard to use more traditional sources (such as databases) because the skills are different (Tricot and Boubée 2013). Mastery of these tools has little or no influence on specific school tasks. Methods (research, navigation) are not always the same (Amadieu and Tricot 2014). In this respect, prior knowledge is an important resource that contributes to autonomy (Greene *et al.* 2011), if methods used are similar to those required in school tasks. Otherwise, the operating skills are not transferable. For example, the reading skills required for a digital document are not comparable to those for a paper document. The structure of the text is different between digital media and paper. The document can even be presented in different ways depending on the websites when choosing displaying options (Rouet 2013). In this respect, the Programme for International Student Assessment (PISA) surveys have included reading exercises in a digital environment since 2012 (OECD 2015).

Information search is considered a subcategory of help seeking (Puustinen and Rouet 2009). It is an important interdisciplinary methodological skill for students from seventh to ninth grades. Information search has been specified in school media and information education curricula since 2016. The aim, given the volume of information to which students are exposed, is to provide them with methods for searching and using information wisely. However, Tricot and Boubée (2013) point out that lower secondary school students find it hard to search and find information because they lack strategy and planning.

3.2.2. *Digital technology and disability*

Since the law of February 11, 2005, the amount of adapted equipment (both digital and non-digital) provided to students with disabilities has increased

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8 Individuals belonging to the generation where digital tools are accessible for everyone and have been used on a daily basis since childhood, the generation born around 2000.

from 17% (MENSR 2006) to 22% (MENSR 2019). The number of students provided with adapted equipment (mainly digital) has increased from 8,190 in 2006 to 33,491 in 2019[9].

The law of February 11, 2005, enables parents to have their child/children with disabilities[10] attend their local school (article 112.1 of the French Education Code). Therefore, they are likely to attend a school that does not provide digital resources adapted to their needs. Consequently, the compensation plan provides, among other things, for the material equipment of these students (and human assistance if needed).

3.2.3. *Digital technology and visual impairment*

In the A2RNE guide, visual impairment is defined as "visual disorders or partial sightedness [concerning] any person whose loss of visual acuity or degradation of visual perception is responsible for a change in behavior and a partial loss of autonomy".

At the same time, the World Health Organization considers that there are six degrees of vision impairment[11] ranging from mild visual impairment to total blindness without light perception. The French local center for people with disabilities[12] considers these degrees for the recognition of vision impairment.

From a demographic point of view, the large majority of students with a visual impairment in public secondary education is equipped with adapted learning resources. Sixty-four percent (MENSR 2019) of them benefit from such equipment (more than students with a motor disability). This contrasts with their low representation among students with disabilities, of whom they represent about 1.8%.

A chapter is dedicated to students with a VI in the A2RNE guide. It discusses the issue of accessibility to educational materials through technical aids and Braille display devices. It should be noted that students with a VI are particularly concerned

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9 The Comité interministériel du handicap (CIH), the French interministerial disability committee of December 2, 2016, supports, among other things, the use of digital technology for students with disabilities.

10 From a regulatory point of view, "a disability [refers to] any limitation of activity or restriction of participation in society suffered by a person in his/her environment due to a substantial, lasting or definitive impairment of one or more physical, sensory, mental, cognitive or psychological functions, a multiple disability or a disabling health disorder" (article L114 of the French Social Action and Family Code).

11 https://icd.who.int/browse11/l-m/en#/http://id.who.int/icd/entity/1103667651.

12 Called *Maison départementale des personnes handicapées.*

about the difficulties in accessing written information (from books, whiteboards, notebooks, video projectors, etc.). They also find it hard to produce them. Indeed, learning documents, especially in scientific subjects, are rarely accessible to both blind and partially sighted students.

This is one of the reasons why students with a VI have little opportunity in science courses (Brzoza and Maćkowski 2014). As such, the use of digital tools is, for a large number of them, an absolute necessity.

For example, some mechanical Braille production equipment, among other Braille machines, cannot be used in the classroom because it is too noisy. And even regular teachers, who are not trained in Braille, would not be able to read, correct or verify the students' work. Yet, Braille users can access documents designed for sighted people when using digital tools.

3.3. Exploratory research

The needs of students with a VI, when they are enrolled in scientific subjects (here in mathematics and life and earth science courses), is the subject of a qualitative study[13]. Semi-directive interviews are conducted with students, regular teachers and TVI.

3.3.1. *Methodology*

The interviews have been conducted in three French lower secondary schools with resource rooms for students with a VI, with two Braille users in ninth grade, two partially sighted students in sixth grade, three partially sighted students in seventh grade, and mathematics teachers, science teachers, TVIs and teacher assistants. All students who have participated use digital tools (refreshable Braille notetaker[14], computer or tablet), but they do not use them in all classes. The interviewers' questions focus on the nature of the digital tools the students use, the way they use them, their knowledge of them, the training they have had and their real and declared needs. These interviews have taken place within lower

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13 These interviews are part of the data collected in a larger project of Mathieu Gaborit's doctoral thesis: L'inclusion des collégiens avec un trouble des fonctions visuelles : l'impact des outils numériques sur les interactions d'aide, under the supervision of Minna Puustinen and Dominique Archambault.

14 A laptop with a Braille display and a Braille keyboard to which it is possible to connect a display for sighted people.

secondary schools. We have collected and stored the consent of all study participants[15].

This survey shows that the students use different tools. Some partially sighted students use adaptative software (text enlargement, speech synthesis) on a regular laptop, while others have tablets. Braille students use refreshable Braille notetakers.

Analysis of the participants' statements shows a number of elements concerning the way students use their device and the positions of the professionals regarding those devices (results 1), the question of those devices enabling visual feedback (results 2) and the question of the advantages of digital books for these users (results 3). These three results are considered in various ways: participants explain the advantages they find in the digital tools they use, as well as their disadvantages, regarding the way they enable learning activities. They also express a number of needs related to their use (utility and/or usability). On these points, the participants have mixed feelings, but the contribution of these tools is considered with different filters: functional (uses), pedagogical (advantages) or behavioral (development of autonomy).

3.3.2. *Results 1: the specific uses of digital tools provided to students*

Students using Braille report using their Braille notetaker almost systematically for exercises, tests and taking notes in class. They also specify that they transfer (give and retrieve) documents on USB keys and that they can also connect their device to a printer to print their work for sighted people.

Partially sighted students using a computer (with appropriate software) report taking notes, looking at documents and having improved visual access to the whiteboard through the use of an integrated video camera. But they do not use the computer in every class. Interviewed students say they use it mainly in science classes and sometimes in mathematics. The TVIs specify that the computer is used to organize documents given to students by regular teachers.

Students using a tablet (individually assigned by the regional education authority) report taking pictures of lessons, exercises and corrections from the whiteboard so that they can adapt the screenshots to their visual needs, for example, by zooming or brightening the image. These statements are confirmed by the teachers. Other tablets belonging to the school and available for all students are also sometimes used by students with a VI in science courses. Regular teachers provide students with animations on this tablet, the same as those projected for other students.

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15 For underage students, parental consent.

3.3.2.1. *Advantages and disadvantages*

We will not exhaustively list the pros and cons from the participants' declarations but some essential points for our purpose.

Students, regardless of the equipment they use, are unanimous on the question of digital document management. Firstly, they grant the accessibility to documents allowed from their device, as opposed to managing paper documents without the device. Then, access to documents is considered faster by some students thanks to the search tools (e.g. searching for a document from its title in the computer) or thanks to tree view classification (in folders and sub-folders). Finally, the digital format enables documents to be compiled, thereby reducing their physical volume:

> I use it [the computer] especially when there are lessons to copy or documents to find. And even in history and geography, I prefer to do it on a computer […] because there are three tons of documents. So, going to look in the notebook is a little complicated. (Partially sighted student)

These advantages are confirmed by the adults working with them. In particular, they stress the need for prior work on the rational learning of a hierarchical classification of documents. According to them, this advantage enables students' autonomy: "[The introduction of the computer] was rather for him to gain autonomy and his parents did not deem it bad that he had a lot in it" (Resource room teacher).

The participants deal with an advantage regarding learning. According to a mathematics teacher, the use of a digital tool makes it possible for concentration to increase as soon as the student achieves autonomy in using it. They have faster access to learning resources. In addition, documents can be accessible in different ways with digital tools (written and vocal). As a result, students with reading difficulties or significant fatigability can sometimes use speech synthesis to reduce the cognitive load associated with concentration:

> […] she learned to use NVDA[16] to listen to the text and reduce cognitive load. So, it was visually less costly for her, and she could concentrate differently. (Resource room teacher about a partially sighted student)

Finally, the question of proofreading (by oneself or others) of the students' work is an important point for students with a VI. Partially sighted students find it hard to

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16 NVDA is free software that vocalizes the text displayed on the screen.

write so that it is difficult for them to read back their own work or to be read back by others. Indeed, one student says: "It's faster with the keyboard than writing by hand. I find that slow and then I don't write very fast. If I write quickly, it's nonsense, I can't even read my own writing" (Partially sighted student).

These advantages declared by the students and the adults working with them must not hide certain significant drawbacks. The first of these is the instability of electronic devices. Students deal with a certain unreliability in the devices they use. They talk about technical failures and unexpected blocking when they work. The students stress that devices are not maintained. As a consequence, adults who work with them have to constantly adapt to daily problems and adapt their teaching according to the available equipment:

> Right now, the laptops don't work anymore, they're dead. But we have tablets, so I could have made them use the tablets. The problem is that the software is not compatible with the tablets, and I can't make them work in the computer room at the same time because we're doing a dissection next to it. So, often, we have constraints related to the availability of the equipment. (Life and earth science teacher)

At the end of the interview, the same teacher mentions another difficulty encountered by the participants: systems are sometimes not adjusted to the actual needs of users. In the former case, it is a problem concerning software compatibility with the equipment available in the school. At the time when she was completing her training as a teacher, she was presented an existing software package and she was requested to list the specificities of her subject. She regrets that her proposals had not been answered. Similarly, she has not received any feedback in response to her request for solutions for software incompatibility problems.

Likewise, a partially sighted student regrets that he cannot use his tablet for any purpose other than to improve the quality of the screenshots. For example, he says that he cannot take notes on his device because it is too slow. He also states that there is no keyboard suitable for this tablet model. However, he says he is aware that the tablet models that enable him to do so are more costly.

Tools (here, tablets) are well rated by teachers who consider this an opportunity to "diversify teaching" and "adapt teaching to special needs". But teachers regret there is a risk in making students responsible for the devices. Indeed, the batteries of the devices are in some cases not charged, the students forget headphones and the WiFi connection does not always enable the software to be used. "There have been a lot of cases where I have had to stop using the tablet because the Internet connection was disastrous. We spent half the lesson waiting for the Internet to work" (Life and earth science teacher).

The advantages of the digital tool (facilitated access, improved concentration, improved reading ability) are undeniably highlighted by the participants. Difficulties are linked to both technical (failures, incompatibilities) and human (maintenance, information, lack of student responsibility) aspects. Participants explicitly state that some needs are sometimes not fulfilled by digital tools in some specific situations.

3.3.2.2. *Needs*

Both students and adults express some needs and especially that of the acquisition of devices. Students are satisfied with the equipment they use, although some, more expert than others, identify certain limitations (slowness, software inadequacy, unavailability of additional accessories). As far as they are concerned, some regular teachers and TVIs campaign for the acquisition of digital tools for all: "[...] I have done everything I could to provide students with a tablet because I think it can help students and colleagues" (Resource room teacher).

Science teachers state the same need regarding the opportunity to provide students with dynamic simulations in order to provide better access to the lesson content. "But I think we should have some animations that the students would watch on their screen, well designed, in a slow motion, well explained with large view" (Life and earth science teacher).

And then, one teacher considers the use of the tablet to be positive for the students in that it enables them to be involved in information search.

The interviews highlight the fact that the participants' needs focus on the acquisition of the devices by students for information access, as well as on specific uses that promote greater autonomy in learning.

3.3.3. *Results 2: tools providing visual feedback*

Tools providing visual feedback enable sighted people to visualize what is displayed on devices initially designed for users with a VI. Some devices designed for people with a VI are not all accessible to sighted people because, for example, they only have a Braille display. Video cameras connected to a personal computer transmit the captured image on the screen. A camera can also be integrated into the computer (usually integrated into the screen frame), just like tablets. Once the images have been transmitted, it is possible to save them (often using a screenshot) and integrate them into a text document or even modify them. These tools providing visual feedback are mainly used by partially sighted students. Students using Braille can also be equipped with a tool providing visual feedback such as an additional screen (such as a computer screen) connected to the Braille notetaker so that sighted people can see what is displayed on the Braille notetaker.

3.3.3.1. *Advantages and disadvantages*

Regarding the use of screens in students using Braille by sighted caregivers, students feel that it is a help to them as it makes their work visible to others. On the one hand, regular teachers acknowledge that their lack of knowledge of the Braille system does not enable them to check students' work from their Braille device. It is hard for them when they do not have a tool providing visual feedback. In this case, they state that they have to ask the student himself/herself for the answers. Still, they cannot make sure that their orally transmitted answers correspond to their actual work (assuming that it is correct). Therefore, the teacher has no choice but to trust the student. On the other hand, a sighted student states that visual access to the work of students using Braille enables her to help these students – for example, during the correction phases when students using Braille have no access to the information displayed on the whiteboard. In this particular case, the students using Braille cannot compare their results with those displayed on the board when the information is not read by a sighted student. "That way, I look directly at [the screen] and ask them if it's okay. Yes, it makes it easier" (sighted student helping a student using Braille).

Since students with a VI are not able to access the information on the whiteboard, the presence of a sighted student next to him is sometimes essential. One of the students says that the screen enables his/her sighted neighbor to check what he writes. Then, the neighbor dictates the information displayed on the board and adjusts the dictation speed. The same student with a VI says that the screen makes it "easier for everyone". The screen enables cooperation and facilitates the transmission of information between the different participants in the learning system. In other words, when using a screen providing visual feedback, this student using Braille considers that he must first help others in order to be helped in return.

On this point, the sighted student considers the screen to be not only an aid but also a way to enable joint learning. "First of all, I look at the result and I ask them. And then I try. When we don't find the same result, we talk, we try to find the best, well, the solution that is the right one" (sighted student helping a student using Braille).

In this case of help episode, help allows for communication and cooperation between students. Information can be shared thanks to the feedback screen; thus, students can question the validity or invalidity of the results together.

The use of tools providing visual feedback for partially sighted students is another matter. Firstly, because these tools are intended for them (whereas feedback screens are intended for sighted people when used by blind students). Then, although they can also be handled by potential sighted helpers, the tools providing visual feedback are used and handled by and for the partially sighted students.

For example, these students report using their cameras or tablets to access information (near or far) that has been difficult for them to access directly. They zoom in on the image of what has been captured by the lens and that is transmitted to the computer or directly. They also indicate that screenshots enable them to store images, enlarge them and return to them later if necessary. "When I can't see, even though I may see that there are things that are marked on the board, I can't really see them, so I take a picture and then sit down and write immediately" (partially sighted student).

This advantage is also mentioned by teachers. Tools providing visual feedback help students when they are too slow to follow the classroom pace:

> […] they sometimes take pictures of the correction on the whiteboard because after a while, I have to erase, because I have to move on and sometimes, for example, in the last lesson, they took a picture and then copied it back by looking at the picture. (Mathematics teacher)

However, teachers admit that this implies that students have to be responsible in managing the tool. Teachers consider that the tablets, among other things, are useful for photographing the whiteboard and for providing options to improve the visual rendering of screenshots. But they state that students must use the tools in a thorough way. Firstly, students must make sure to have their tool with them for every lesson. And secondly, they must make sure it works, which is not always the case.

This aspect, as a disadvantage, is mentioned by a student who points out that devices must always be charged and, if necessary, students have to make sure they can get power in the classroom:

> The disadvantages are that it always has to be charged, like in French lessons or classes where there is no outlet nearby. Because in life and earth science, there are plugs on the lab benches, so you can charge it. But otherwise, it must always be charged because when it dies, it's annoying. (Partially sighted student)

The conditions under which the image is captured are highlighted by the students. According to them, these play an important role in accessing the information displayed on the whiteboard. Framing, reflections and surface of the board determine the shooting conditions:

> […] it will take a whole lot of organization, that there is a gap so that the camera can frame the board but… that's a tall order! But above all, I would have to be in front of it because otherwise, there could be reflections, other things, etc. (Partially sighted student)

We can see here that the advantages and disadvantages identified by students and those who help them are mainly linked to technical issues. Indeed, the facilitation of access to information, the insufficient writing speed offset by screenshots, the conditions for capturing images or the constraints related to loading devices are not part of students' learning skills but are conditions in using them. In addition, students are aware that these tools enable them to be helped by others in the classroom. These tools also facilitate cooperation in providing access to work in Braille for sighted helpers. It provides additional ways for communication between students regarding learning strategies. Finally, discussing the students' behavior, the interviews highlight the fact that they must take responsibility for the management of their equipment. This is a commitment that not everyone is aware of.

3.3.3.2. *Needs*

Some partially sighted students use a camera which transfers a screenshot of the whiteboard to their computer screen or to their tablet thanks to the camera function. A resource room teacher confirms the need to use this type of device to enable access to documents when they could not be adapted in advance (e.g. by the resource room teacher or assistant, or an external transcription service). The equipment can therefore compensate accessibility-related emergencies:

> […] or if there is, for example, an image in the book or a document that has not been adapted, being able to do it right away without having to go out, make a photocopy, enlarge it, for immediate use, like a magnifying glass. (Resource room teacher)

Similarly, a life and earth science teacher highlights the specificities of her subject in terms of observation and technical achievements. She states she needs to have a camera fixed/pointed on the microscope to transmit the enlarged moving image of the experiment on to a screen. However, she regrets that she does not have this type of equipment.

The students consider the use of tools providing visual feedback to require precise organization to optimize their effectiveness. Indeed, a student who does not use the camera systematically states that its placement determines the ability to use the tool. "And then, anyway, if one day I have to use my camera in the classroom, I'll have to change seats" (partially sighted student).

The needs formulated by students and teachers correspond to the advantages and disadvantages identified beforehand. They are exclusively related to technical issues in accessing information for learning.

3.3.4. *Results 3: the use of digital textbooks*

Digital textbooks are important as regards the use of assistive technologies by students with disabilities. Their access is a significant help in promoting the inclusion of these students. While the digital plan launched in 2015 provides for the introduction of digital tools into schools for all students, it is necessary to consider the particular situation of students with a visual impairment. The lack of history regarding the use of digital textbooks by the students with a VI does not enable us to assess the use of digital textbooks by these students. However, a recent exploratory study (Castillan *et al.* 2018) makes it possible to put forward some hypotheses on the use that students make of digital textbooks and the difficulties they encounter in using them.

After having presented the different ways in accessing learning content, the authors identify a number of difficulties encountered by students with a VI in elementary and lower secondary schools in France and Sweden. The students report, during semi-directed interviews, that they encounter problems in accessing information. On the one hand, images and alternative texts, among other things, are not available and students cannot identify the nature of the document. They sometimes do not understand its function in the task to achieve. On the other hand, they talk about problems of compatibility of learning content with the devices (in particular Braille notetakers). Indeed, the conversion of files into a format that can be read by their tools is one of the main problems they encounter.

The authors also identify two problems which echo our observations: the choice of information (A) and the interaction with the content (B). These two points are developed in section 3.3.4.1.

3.3.4.1. *Advantages and disadvantages*

With regard to point A, the authors take the example of history, a subject in which students are regularly asked to comment on the images. They raise the question of changing sensory modality: if an image is not accessible, then a written or oral description is proposed:

> If a description of the image is provided, it generally does not allow the student to comment because either the description does not contain enough information to complete the task, or, on the contrary, the response elements are already formulated in the alternative text. (Castillan *et al.* 2018, p. 97)

The choice of the information in the description was made by the teacher. This choice corresponds to a specific learning objective. For example, in a science exercise with a diagram, a certain amount of information is available: texts, images,

diagrams, etc. However, not all of this information is needed to solve the task. Therefore, the student does not achieve the same task whether he has to use pieces of information or others. The question is chosen by the teacher to ensure that the student performs a specific task (e.g. identifying an element from a set, understanding a process/phenomenon, etc.). In this situation, the student has to make choices (select and use this or that information). A partially sighted student in our study mentioned a problem of this kind. He has been given the same work as the students using Braille. The image is missing from the digital document but a description is proposed as an alternative:

> But since it's a description, well, then, you can't really make your own description. So, for example, there are some details that they have and that we don't have, because we don't have the image. (Partially sighted student)

The information accessible to the student is already partly handled so that he cannot form an opinion. But also, he cannot even access all the information like the other students (sighted students). The problem encountered by this student shows that access to the image through the digital textbook can be differentiated between the partially sighted and the blind students (whose needs are very different). Then, digital tools present options for improving the visual quality of digital textbook content (zoom, brightness, contrast, colors, etc.).

With regard to point B, although some tablets often present text editing functions with a virtual keyboard, this keyboard is available in a different application from the one that displays images or digital textbooks. For example, the image application can display a photo of the whiteboard on which the correction of an exercise has been written by the teacher, but to copy the content of this photo, the student needs to open the text editing application. The text editing application takes up the entire screen and hides the photo of the board. When a student needs to write a commentary on an image, a diagram, a figure or a map, the problem is the same. That is to say, when the student writes the commentary, the document is no longer available since the text editing application hides the document. "I wish I had a tablet to magnify an image and at the same time use the virtual keyboard to take notes […] but it is very, very expensive" (partially sighted student).

This student brings up a problem with the equipment (here, a tablet) that does not present certain functions. Therefore, it means that, even if digital textbooks can be installed on digital tools[17], they cannot be used easily. Indeed, if the student has to memorize all the information from the digital textbook and to reproduce it in a

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17 Students are often equipped with only one device (a tablet, computer or Braille notetaker).

written work, that may lead to a significant cognitive overload. So using the digital textbook sometimes makes it more difficult for the student.

However, from a logistical point of view, i.e. space and weight saving, and transport facility, the students and adults in our study state that they appreciate the comfort provided by the digitization of documents and, by extension, digital textbooks:

> [...] it lightens their schoolbags, it prevents them from losing documents, tearing them up when they are in binders, having to turn a large number of pages. So both for the quantity of documents, and for being able to find them more easily, that's really good, now regarding the number of documents. (Resource room teacher)

This TVI goes on to specify the advantage of having digital textbooks: "…But it is also inside the document when it comes to finding information."

Indeed, the search function available on digital tools makes it easier to find information in a long document: the size of the characters in digital version can be enlarged or reduced according to the user's needs, but in the case of a long text, it is often difficult to have a global view of the text (Rouet 2013).

This is particularly true for students with a visual impairment, whether partially sighted or blind. The synoptical access to a document depends on the degree of visual impairment (Hatwell 2003; Lewi-Dumont 2016). For example, it is sometimes difficult for some students to imagine a long text as a whole and to identify relevant elements, especially when these elements are in different and distant paragraphs. Efficient use of digital textbooks and digital documents depends on a good command of search functions.

3.3.4.2. *Needs*

Access to digital versions of textbooks depends on school licenses and local policies. For example, one resource room qualified teacher considers that the acquisition of digital versions of textbooks can reduce the number of adaptations of documents related to the paper textbooks in question. Licenses are sometimes limited to viewing textbooks online, which requires an Internet connection. This is the case for this teacher, who underlines that some shared versions of the textbooks are online versions. She emphasizes the need to buy individual licenses in standalone[18] versions: "There is WiFi here, so students have the online textbook.

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18 Version that can work autonomously, therefore without an Internet connection.

So it's easier than to keep adapting the documents. But for sure, WiFi doesn't work all the time."

Indeed, some publishers offer shared licenses, but they sometimes only work with an Internet connection. This is not always the case for individual licenses:

> But this time, I asked the manager to buy licenses for the resource room students. Before, we couldn't because we had to buy them for the whole class; it was complicated to buy them individually. (Resource room teacher)

Also, students say they would like to use digital textbooks on tablets and computers. When asked the question "Would you like more help on the computer equipment, on the tablet, for example?" one of these students answers: "Well, I'd like my textbooks. I don't have them yet."

Digital textbooks used with specific or general digital tools are popular. Still, there is a gap between the actual needs and the real advantages. For example, not all documents are available and usable, and when they are, not all information is accessible in its original state. In addition, some tasks have to be completed simultaneously such as document commentary (consulting the document and writing the answers to the questions). Finally, the fact that textbooks require an Internet connection is a potential additional difficulty. However, the needs the participants expressed seem to reflect a greater willingness to use digital textbooks. But it is not enough. Indeed, as we have specified, the proper use of tools depends on a good command of their functions, and these require appropriate training on the digital tools which the students use.

3.4. Digital tools and training of participants

As Amadieu and Tricot assert, "tools are only tools" (Amadieu and Tricot 2014, p. 105), and they have significant potential if they are considered as such. As a result, the specificity of the use of digital tools does not only concern the tools themselves and their functionalities, but also the ability of users to master the functions and use them at appropriate times. These aspects are reflected in the comments of some participants.

3.4.1. *Declared education limits*

When teachers and resource room teachers are asked if they think that students could do more with their tools than they actually do, a majority of them says "yes".

However, they admit that they are not trained to use the devices. They do not know how to help students do more.

The training of students on digital tools is not always provided by a TVI. It is sometimes provided by a support service for students with a disability. This service helps the students with specific re-education (orthoptics, psychomotricity, orientation and mobility, etc.). It also helps them with computer training. The training is provided by a computer specialist or an occupational therapist. To the same question about the students' ability to do more with their tools, a resource room teacher answers:

> Oh yes, I think there is potential, they can do a lot more. But we have to follow the pace of the support service, in the sense that we use the tools in relation to our needs. (Resource room teacher)

It therefore seems important to specify that the training must be coordinated with the actual activity and specific needs of the student in the classroom. The education of teachers with digital tools is at stake.

3.4.2. *The stated needs of teachers*

Some regular teachers say they would not be able to help students with their digital tools if they asked for help. They say that training on students' tools would enable them to help the students better. They consider it to be their role to know how to adapt to the situation and to be aware of the solutions that can compensate for students' difficulties.

Teachers consider that the training of students on digital tools should be anticipated so that they already know how to use them when they start lower secondary school. A resource room teacher notes that when a student uses digital when she starts lower secondary school, it is a considerable advantage. On the other hand, she assumes that training on digital tools represents a significant investment, a cost in terms of time and concentration. But, according to her, this cost is even more significant when the training has to be started or continued when the student starts lower secondary school.

3.4.3. *Professional development today*

Article 112-5 of the French Code of Education provides for the provision of qualified teachers to cope with students with a disability (initial and continuous education). In this respect, the skills curriculum for teachers and educators

(decree of July 1, 2013[19]) lists the skills that all teachers acquire throughout their career from initial education. They have to take into account the diversity of students and elements of digital culture. The first skills must therefore be worked on from the initial professional education. Every teacher knows that he/she must adapt to the needs of the students. However, it would be an illusion to think that teachers can master all skills, including those regarding digital tools, and for every kind of disability.

The professional development and certification required to become a TVI has been amended in 2017 to reflect the inclusive missions of all teachers. The 300-hour program for the certification is offered to elementary and secondary teachers. It consists of a common core curriculum that deals with the ethical and societal issues of inclusive education. It also deals with the legal and regulatory framework, institutional structures, the cultures and practices of care and support professionals, the professionalization of relationships with families, the identification of special educational needs and pedagogical responses, and the role of the specialist teacher as a resource person for inclusive education.

A module for professionalization in employment (e.g. "Coordinating a resource room" or "Teaching in a special school") deals with the issue of the teacher trainee position. Finally, a 104-hour in-depth module provides for the specialization of trainees according to the types of disabilities (for example, visual impairment). But 100 hours are not enough to train both for the specific problems of students with a VI and the mastery of specific techniques (Braille and digital tools). These skills can be acquired and validated before entering training. With this aim in mind, teachers can request a 100-hour national extra module (among others). This module is offered by the French National higher institute for training and research on special needs education[20]. It provides for the learning of uncontracted and contracted Braille, as well as mathematical Braille; the discovery and basic training for digital technologies (equipment, software) enabling teachers to adapt documents regarding the VI of the students. This module is proposed to teachers who wish to work with students with a VI in the future, or who already have a student with a VI in their class and wish to be able to help them directly (such as the mathematics and life and earth science teachers who participated in our survey). This module can be provided to teacher assistants.

Following certification, other professional education modules are offered, sometimes locally. TVIs are eligible for 100 hours of extra modules after graduation.

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19 Available at: https://www.education.gouv.fr/cid73215/le-referentiel-de-competences-des-enseignants-au-bo-du-25-juillet-2013.html.

20 In French: *Institut national supérieur de formation et de recherche pour l'éducation des jeunes handicapés et les enseignements adaptés* (INSHEA).

They can use them within five years after graduation. They can use these hours either to learn about other disabilities or, for example, to go into depth in Braille notations. It includes digital Braille, training on Braille notetakers, production of tactile documents (as have seen above, textbook images are a specific difficulty for students with a VI), training on text editing software in order to more easily adapt teaching materials for these students.

These training modules are regularly reviewed in accordance with trainees' feedback and the connection between initial and continuing education. One of the difficulties lies in managing the heterogeneity of teachers' needs, whose digital skills are also heterogeneous, and the needs of this small student population. Tools (software, hardware) are constantly evolving. It is therefore difficult to believe that a teacher specializing in teaching students with a VI should not regularly update his (her) skills in adapting documents for these students. Similarly, this update of skills should enable the TVI to fulfil his (her) new missions as a resource person (transmission and dissemination of information). Thus, he/she can help their non-specialized colleagues become as autonomous as possible and enable them to directly help each of the students.

3.5. Conclusion

This research highlights the advantages and disadvantages in using digital tools as they are used today by lower secondary school students with a VI. It also identifies a number of drawbacks and limitations in the use of these tools. The needs reported by resource room students, TVIs, assistants and regular teachers in this survey are useful for professional development purposes. It therefore seems interesting to us to directly question the participants involved in the education of students with special needs.

Three themes structure the results of this research: the actual uses of digital tools, the specific features of tools providing visual feedback and the contributions of digital textbooks. These are central to the daily concerns of the participants and make it possible to highlight the diversity of needs. These needs render the essential issues of the use of digital tools in lower secondary schools: the choice of the device and its components (if any); the choice of software; the required professional development in using tools helping these students. These points are complementary in that tools (digital or not) must match users' needs, situations (learning or not) and prior knowledge. Indeed, a tool must be used in a facilitated and sustainable way.

Specifically, needs are identified at two levels. The first corresponds to those of teachers in their teaching to access students' work and make students be able to access learning content. The importance of this first level lies in the fact that it is

essential to create an environment which generates interactions between students with a VI and potential helpers (regular teachers, assistants, TVIs, sighted peers). Help interactions can only take place when there is communication. The second level corresponds to the students' needs. They must be able to access learning content in order to work and succeed in an autonomous way. The importance of this second level lies in providing students with a VI with an environment in which they can make decisions and choose their own learning strategies. In this respect, they must be aware of usable resources, and have access to these resources, particularly through digital tools. To do this, they must know the functions (depending on the classroom level) and the potentialities of these tools.

Teachers' continuous professional development aims to fulfil these two levels of needs. With the first, training is effective for teachers with their skills regarding the use of digital tools and their functions. With the second, it is indirectly related to some students' actual identified needs when they use a digital tool for learning. In this respect, training only partially meets the accessibility of digital tools. The tools used by the participants are technically accessible, but without the corresponding training, they are unusable. Providing a tool without ensuring that it is usable can make the situation even more difficult, more than if there was no digital tool at all. Therefore, usability should be the focus in training teachers with digital tools so that they can adapt and diversify their teaching.

3.6. References

Amadieu, F., Tricot, A. (2014). *Apprendre avec le numérique: mythes et réalités*. Retz, Paris.

Brzoza, P., Maćkowski, M. (2014). Intelligent tutoring math platform accessible for visually impaired people [Online]. *Computers Helping People with Special Needs*, 519–524. Available at: https://doi.org/10.1007/978-3-319-08596-8_81.

Castillan, L., Lemarié, J., Mojahid, M. (2018). Numérique, handicap visuel et accessibilité des apprentissages. Contenus pédagogiques numériques: quelle accessibilité pour les élèves présentant une déficience visuelle? *Éducation et formation, e-311.*

Gaborit, M., Archambault, D., Puustinen, M., Lewi-Dumont, N. (2018). The question of students' autonomy in academic learning when using ICT: Case study in analysing help interactions involving two 9th graders with a visual impairment. *Modelling, Measurement and Control C*, 79(4), 195–200.

Greene, J.A., Moos, D.C., Azevedo, R. (2011). Self-regulation of learning with computer-based learning environments [Online]. *New Directions for Teaching and Learning*. 126, 107–115. Available at: https://doi.org/10.1002/tl.449.

Hatwell, Y. (2003). *Psychologie cognitive de la cécité précoce*. Dunod, Paris.

Lewi-Dumont, N. (2016). *Enseigner à des élèves aveugles ou malvoyants*. Canopé, Futuroscope.

MENSR (2006). Repères et références statistiques sur les enseignements, la formation et la recherche [Online]. Ministère de l'Éducation nationale, de l'enseignement supérieur et de la recherche. Available at: http://media.education.gouv.fr/file/40/0/6400.pdf.

MENSR (2013). Repères et références statistiques sur les enseignements, la formation et la recherche [Online]. Ministère de l'Éducation nationale, de l'enseignement supérieur et de la recherche. Available at: http://www.enseignementsup-recherche.gouv.fr/cid81888/reperes-et-references-statistiques-edition-septembre-2013.html.

MENSR (2019). Repères et références statistiques sur les enseignements, la formation et la recherche [Online]. Ministère de l'Éducation nationale, de l'enseignement supérieur et de la recherche. Available at: https://www.education.gouv.fr/cid57096/reperes-et-references-statistiques.html.

OECD. (2015). Who are the best online readers? *PISA in Focus*, no. 55, Éditions OECD, Paris. https://doi.org/10.1787/5jrtmzscrhr6-en.

Puustinen, M., Bernicot, J. (2013). Analyzing natural data to understand how students seek and obtain homework help online. In *Advances in help-seeking research and applications: the role of emerging technologies*, Karabenick, S.A., Puustinen, M. (eds). Information Age Publishing, Charlotte, 147–177.

Puustinen, M., Rouet, J.-F. (2009). Learning with new technologies: Help seeking and information searching revisited [Online]. *Computers & Education*, 53(4), 1014–1019, 1040–1047. Available at: https://doi.org/10.1016/j.compedu.2008.07.002.

Rouet, J.-F. (2013). Les spécificités de la lecture numérique [Online]. Available at: https://www.docpourdocs.fr/spip.php?article528.

Sweller, J., Ayres, P., Kalyuga, S. (2011). Cognitive load theory [Online]. Available at: www.springer.com/gp/book/9781441981257.

Tricot, A., Boubée, N. (2013). Is it so hard to seek help and so easy to use Google? In: *Advances in help-seeking research and applications: The role of emerging technologies*, Karabenick, S.A., Puustinen, M. (eds). Information Age Publishing, Charlotte, 7–36.

Help Between Students
with Disabilities and Teachers

4.1. Introduction

Since Law No. 2005-102 of February 11, 2005, and Law No. 2013-595 of July 8, 2013, were introduced in France, all children and adolescents with disabilities have had the right to access school. This has considerably increased the number of these students enrolled in the French education system, and extended and diversified their educational pathways.

In this context, and given that the two key concepts of these laws – accessibility and compensation – "are closely linked to the concept of help" (Terrat 2015, p. 19), in this chapter, we propose a focus on in-class academic help and students with disabilities. Firstly, we will present the change of legislation in France and its consequences on the schooling arrangements of children and adolescents with disabilities. Secondly, we will question the concept of in-class academic help in light of French scientific literature, from the point of view of the person providing help (who we will call the helper in this chapter), but also from the point of view of the person receiving it (who we will call the helpee). Finally, we will present the results of two PhD research projects on filmed observations of dyadic in-class help interactions involving teachers and students with autism spectrum disorder (ASD), on the one hand, and students with a visual impairment, on the other.

4.2. The change in legislation and its implications

In 1994, in Salamanca, Spain, representatives of governments from 92 countries, including France, met to discuss the issue of education and special educational needs

(SEN). The Statement from this World Conference affirmed a number of principles, in particular concerning pupils with disabilities[1]. This Statement can rightly be considered as one of the foundation stones of the subsequent French laws, in particular those of February 11, 2005, "on the equal rights and opportunities, participation and citizenship of people with disabilities" and of July 8, 2013, on "the refoundation of the school of the Republic".

4.2.1. *The same right to education for every child, whether with disabilities or not*

The Salamanca Statement (UNESCO 1994) proclaims the educability of every child, while reaffirming that "every child has unique characteristics, interests, abilities and learning needs" (UNESCO 1994, p. viii). This statement goes beyond the simple framework of disability:

> The guiding principle that informs this Framework is that schools should accommodate all children regardless of their physical, intellectual, social, emotional, linguistic needs or other conditions. This should include disabled and gifted children, street and working children, children from remote or nomadic populations, children from linguistic, ethnic or cultural minorities and children from other disadvantaged or marginalized areas or groups. (UNESCO 1994, p. 6)

In this vein, the French law of 2005 "aims to ensure that children, adolescents or adults with disabilities have access to institutions open to the whole population and remain in a mainstream school environment […]" (article 2, authors' translation).

The Circular No. 2016-117 of August 8, 2016, on the enrolment of pupils with disabilities further reaffirms the right to education for all children, whether with disabilities or not, as well as "equitable treatment" for all pupils: "A pupil with a disability is a pupil like any other. With the necessary adjustments and adaptations, he or she must have access to the same knowledge and be subject to the same requirements" (circular no. 2016-117, authors' translation).

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1 The notions of SEN and disability are similar but do not overlap. In fact, a (e.g. motor) disability does not automatically lead to special educational needs in all forms of learning. Conversely, an individual may have special educational needs without being recognized as having a disability (e.g. allophone students).

4.2.2. *A big "systemic change"*

The Salamanca Statement recommends fundamental changes at many levels of the education system, policies providing the framework, and attitudes, stating that:

> Changes in all the following aspects of schooling, as well as many others, are necessary to contribute to the success of inclusive schools: curriculum, buildings, school organization, pedagogy, assessment, staffing, school ethos and extracurricular activities. (UNESCO 1994, p. 21)

It also refers to vocational training and the need for "support services".

In the first place, it recommends that signatory States integrate children with disabilities into mainstream classrooms: "Adopt as a matter of law or policy the principle of inclusive education, enrolling all children in mainstream schools" (UNESCO 1994, p. ix).

> Educational policies at all levels, from the national to the local, should stipulate that a child with a disability should attend the neighborhood school, that is, the school that would be attended if the child did not have a disability. (UNESCO 1994, p. 17)

The rule proposed in this Statement is thus to allow henceforth all children, whether with or without SEN, to attend the same mainstream classes, unless – in exceptional cases – this does not prove beneficial to them. The French law of February 11, 2005, reflects this in Article 19:

> […] In its fields of competence, the State shall provide the necessary financial and human resources for the schooling of children, adolescents or adults with disabilities in mainstream settings. Any child, any adolescent with a disability or a disabling health disorder is enrolled in the school or in one of the establishments mentioned in Article L. 351-1, the closest to his or her home, which constitutes his or her reference school. (authors' translation)

The law of July 8, 2013, subsequently strengthened the State's commitments by establishing, for the first time, the principle of inclusive education and promoting more inclusive educational pathways from preschool to university.

The Salamanca Statement, while wishing to remove "barriers that impede movement from special to regular schools", suggests, however, that this should go hand in hand with the organisation of "a common administrative structure" (UNESCO 1994, p. 19). France therefore first set up Clis – integration classes

(1989) which were later renamed inclusive education classes (2009)[2] – allowing children with disabilities to be enrolled in a mainstream school. The circular of July 17, 2009, on the enrolment of pupils with disabilities in elementary schools defines a Clis as "a fully-fledged class in the school in which it is located". It was only after the creation of Ulis (localized units for inclusive education) programs in 2015[3] that a student could be enrolled in a mainstream class in his or her local (reference) school, as recommended in the Salamanca Statement. With regard to the enrolment of adolescents with disabilities in secondary education, UPIs (pedagogical units for integration) were created in secondary schools in 1995[4]. UPIs enabled adolescents with intellectual disabilities to be partially integrated into general classes. They were replaced in 2010[5] by Ulis programs open to students with other disabilities. During the same period, Ulis programs were introduced in vocational, general and technical high schools. At present, as stipulated in the law of February 11, 2005 (articles 19 and 21), and as mentioned in the circular of August 8, 2016, children and adolescents with disabilities may be oriented to:

– a mainstream school, i.e.:

- be enrolled full time in mainstream classes, with or without the support of professionals from a medical and social institution or service;

- divide their schooling time between the mainstream class and a special program (Ulis or outsourced teaching unit) located either within the mainstream school or in a medical and social institution or service;

- attend appropriate general and vocational education[6];

– the teaching unit of a medical and social institution or service. The time spent in school varies depending on the type of establishment. The IES (*instituts d'éducation sensorielle*, institutes of sensory education) provide mostly full-time schooling. In IMEs (*instituts medico-éducatifs*, medical and educational institutes) and IEMs (*instituts d'éducation motrice*, motor education institutes), students attend

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2 Despite the transition from the principle of school integration to that of school inclusion, the acronym Clis has remained unchanged.

3 See circular No. 2015-129 of August 21, 2015, on localized units for inclusive education (Ulis) programs for the enrolment of pupils with disabilities in primary and secondary education.

4 See circular No. 95-125 of May 17, 1995, on the establishment of programs for the educational grouping of adolescents with mental disabilities: UPIs.

5 See circular No. 2010-088 of June 18, 2010, on the education of pupils with disabilities and collective programs in secondary schools.

6 Adapted general and vocational education is provided, for lower secondary students with learning difficulties, by general and vocational adapted teaching sections (Segpa) and regional adapted teaching institutions (Érea).

class rather on a part-time basis. The teaching unit may be outsourced, which increases inclusion time;

– home schooling, through distance education (see *Centre national d'enseignement à distance*, Cned). In fact, article 19 of the 2005 law specifies that "if necessary, adapted distance teaching methods […] are proposed by an institution under the authority of the Ministry of National Education" (authors' translation).

Within a mainstream classroom, teaching is provided by a general education teacher (primary or secondary school teacher). In all the other cases presented above (Ulis program, outsourced teaching unit, teaching unit of an institution or medical and social service), teaching is provided by a special education teacher, i.e. a general education teacher who has received further special education training and obtained the corresponding professional certificate[7].

4.2.3. *New missions*

The mainstream class – taught by a general education teacher – thus has become the first and most recommended context for the education of a child with disabilities: the tasks that special education teachers were formerly given have partly been transferred to general education teachers (Thomazet and Merini 2015). The scope of the teachers' action has considerably expanded, insofar as they may have to teach children and adolescents with all kinds of SEN, and therefore provide the necessary help (e.g. sequencing the task to structure the workflow for a student with ASD or using raised-line drawings to transmit image information to a student with a visual impairment).

Special education teachers have also broader missions than before: usually, they become the school's inclusive education coordinators. According to the website of the association *Intégration scolaire et partenariat*[8], for example:

> The Ulis program shall promote, as much as possible, the inclusion of students into the mainstream classes of the elementary or lower secondary school. This is why the mission of the Ulis coordinator is twofold. On the one hand, he or she must provide education during student groupings and, on the other hand, he or she must ensure that,

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7 Since the reform of special education teacher training in 2017, the certification has been the same for primary- and secondary-level teachers; it is the certificate of professional competence in inclusive education practices (Cappei; see also section 4.2.5).

8 https://ecole-et-handicap.fr/dispositifs-daccueil/les-ulis-unites-localisees-dinclusion-scolaires/ (accessed April 14, 2019).

when they are enrolled in a mainstream class, students receive the
instruction that is appropriate for them. (authors' translation)

4.2.4. *From integration to inclusion*

In France, disability is defined by article L.114 of Act No. 2005-102 of February 11,
2005. It refers to:

any limitation of activity or restriction of participation in life in society
endured by a person in his or her environment due to a substantial,
long-lasting or permanent alteration of one or more physical, sensory,
mental, cognitive or psychic functions, profound intellectual and
multiple disabilities or a disabling health disorder. (authors' translation)

Children and adolescents with disabilities are those whom the *Commission des
droits et de l'autonomie des personnes handicapées* (CDAPH, French commission
for the rights and autonomy of disabled people) has ruled, regardless of the terms of
their schooling.

The Salamanca Statement marks an evolution in the consideration of disability,
insofar as it advocates what will be called inclusion in France, by contrast with
integration[9]:

[I]nclusive education contrasts with the previous integrative approach,
in that it is up to the environment to adapt to the needs of the person
[with disabilities], and no longer to the person to adapt to the
environment. (Beaucher 2012, p. 7, authors' translation)

The Luxembourg Charter confirmed this two years later: it is up to the
institution, and therefore to teachers and their instruction, to adapt to the disabilities
students encounter and not the other way round (European Community – Directorate
General XXII 1996). In this spirit, the Salamanca Statement affirms the need to
make knowledge accessible: "Curricula should be adapted to children's needs, not
vice-versa. Schools should therefore provide curricular opportunities to suit children
with different abilities and interests" (UNESCO 1994, p. 22).

In the context of inclusion, pupils with disabilities are therefore enrolled in the
mainstream class corresponding to their age group, and no longer in a special class,

9 The Salamanca Statement uses the term "integration", but the idea largely corresponds to
"inclusion" as defined by the 2005 law.

the result being that they spend on average more time with "mainstream" children of the same age than in the context of mere integration.

4.2.5. *Teacher training*

Such a change in the conception of disability ultimately results in all teachers (i.e. general and special education teachers) changing their teaching practices. The Salamanca Statement (UNESCO 1994) thus contains the following proposal: "[E]nsure that, in the context of a systemic change, teacher education programs, both preservice and inservice, address the provision of special needs education in inclusive schools" (p. x). A proposal taken up by the French law of February 11, 2005:

> Teachers and supervisory, reception, technical and service staff shall receive, during their initial and continuous training, specific training concerning the reception and education of pupils and students with disabilities, including information on disability as defined in Article L.114 of the Social Action and Family Code and the various forms of school support. (Article 19, authors' translation)

For example, it is up to the special education teachers, as designated resource persons[10], to assist their general education teacher colleagues to receive students with SEN, in particular through joint development of teaching sequences and co-teaching within the framework of inclusive practices.

Our conception of in-class academic help is thus in line with the framework of inclusive education, which states that schools must be accessible to all, supporting everyone's learning, regardless of the differences between learners (UNESCO 1994). In this context, a continuum of help, from minimal and "generic" help in mainstream class to specific, additional help, is advocated. The challenge is to provide access to a common curriculum for all (UNESCO 1994). In the following, we place ourselves in this perspective, i.e. we do not distinguish between students, regardless of their SEN, and we consider help for learning on a continuum that benefits everyone (Vienneau 2002; Dunand and Feuilladieu 2014).

4.3. The concept of in-class academic help

Help can take different forms. It may be of varying degrees and meet different objectives. For example, it can be provided by an individual (teacher, peer, parent,

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10 See Circular No. 2017-026 of February 14, 2017, on special vocational training and certificate of professional competence in inclusive education practices (Cappei).

etc.) or by educational software, and it can be defined according to when it takes place (in or outside school hours) and/or where it takes place (in the classroom, in school or outside school).

In this chapter, we are exclusively interested in help for learning taking place in the classroom during school time, between the different actors involved, in the French context. Indeed, school systems differ significantly from one country to another, and this greatly influences conceptions and practices regarding in-classroom help (Viriot-Goeldel 2007). In this context, we consider that academic learning taking place in the classroom is the starting point around which other forms of helps revolve. As a result, when we help a student outside of class and school time, we do it in relation to what has been done in class (e.g. doing homework, understanding a lesson from class). In other words, chronologically, the first level of help to students in their academic learning corresponds to the help that is set up in the classroom between an expert (teacher, assistant, peer) and a novice (student; Viriot-Goeldel 2013), as part of social interactions between them[11]. In addition, in-class academic help seems to have the greatest impact on students' learning (Piquée and Viriot-Goeldel 2016) compared to other types of "outsourced" help (e.g. Barrère 2013).

Our approach to help is in line with the approach of Wood *et al*. (1976) to tutoring[12] interactions between an adult and a child. However, it differs in that it concerns collective teaching/learning situations (i.e. situations that take place in the classroom) where dyadic interactions take place, as well as group interactions between the individuals that are present (teachers, pupils, non-teaching staff). These collective situations have been studied in France using the theoretical framework of Wood *et al*. (1976). For example, Vannier (2006) identifies three tutoring functions in the teacher's activity, among the six distinguished by Wood *et al*. (1976)[13]. These are recruitment, reduction of the degrees of freedom and frustration control that would allow for individual students' needs to be met, while advancing whole-class activity.

Other authors (Bucheton and Soulé 2009) propose a "teacher multi-agenda model" for analyzing teacher activity in which tutoring interactions are integrated.

11 We refer here to the work of Beaudichon *et al*. (1988, p. 133) to define social interaction in a learning situation, i.e. the fact that "persons in attendance develop reciprocal actions between them in regard to a referent or a shared project" (authors' translation).

12 Tutoring refers to a situation of asymmetric social interaction involving an expert (or a tutor or helper) and a novice (or a tutee or helpee) where the expert helps the novice to progress in his or her learning, without doing the work for them (see, for example, Winnykamen (1990)).

13 Recruitment, reduction in degrees of freedom, direction maintenance, marking critical features, frustration control and demonstration.

It is organized around learning objects and four major teacher concerns, one of which is the scaffolding of the student's work. Other French research on students with disabilities has also used the theoretical framework of tutoring interactions to analyze in-class academic help. For example, Gombert and Roussey (2007), in developing a typology of teachers' professional gestures of help, combine the function of maintaining a direction with individualized guidance and control gestures, and the function of marking critical features of the task with methodological and metacognitive teacher contributions. Similarly, Rivière and Lafont (2014) and Vandromme (1993) analyze peer interactions in the classroom, and Chauvot (2011) analyzes interactions with teaching assistants. These studies show that the theoretical framework of tutoring interactions of Wood *et al.* (1976) makes it possible to analyze both dyadic and collective (i.e. concerning all students, with or without SEN and/or disability) teaching/learning situations and to consider several points of view on help (teachers, peers, and non-teaching staff).

Nevertheless, even if the work of Wood *et al.* (1976) still constitutes a landmark in the research field dedicated to in-class academic help in France, other theoretical frameworks – sometimes using different terms and integrating new points of view – have also been introduced during the last 15 years (Toullec-Théry and Nédelec 2008). Indeed, terms such as accompanying (e.g. Chauvot 2011; Wojcieszak and Zaid 2016), help (e.g. Roiné 2012; Zorn and Puustinen 2017a; Connac 2018; Petitfour 2018), and mediation (Numa-Bocage 2007; Weil-Barais and Resta-Schweitzer 2008) are used in the literature to discuss situations of in-class tutoring.

In addition, a point of view other than that of helpers (teachers, peers and non-teaching staff) is also currently being studied in France: that of the students being helped (through their active search for help; Francols 2012; Zorn and Puustinen 2017a). The now classic works of Nelson-Le Gall (1981, 1985) are at the origin of this research trend that arrived in France in the 1990s. This author (Nelson-Le Gall, 1981, 1985) proposed a model of the help-seeking process, consisting of five steps: becoming aware of one's need for help, deciding to seek help, identifying a potential helper, using strategies to obtain help, and evaluating the help-seeking episode. She also showed that help seeking could serve different purposes and that only instrumental help seeking, aimed at understanding and thus autonomously controlling the task, plays an adaptive role in the learning process (Puustinen 2013). Students may also make other types of requests; for example, executive help seeking is aimed at obtaining the right answer directly and thus avoiding getting involved in the task, and confirmation-asking (i.e. students try to find out if they have understood the instructions correctly, if they have succeeded in the task, etc.) at reassuring oneself (Puustinen 1998).

We can therefore say that the work of Wood *et al*. (1976) and Nelson-Le Gall (1981, 1985) paved the way for a very rich research field. Our approach is in line with this perspective and proposes to move away from a teacher-centered approach to help (Lescourach 2018); in other words, we will not only be interested in help provided to students (who then only receive it) but also in help actively sought, i.e. initiated by them. To do this, we take into consideration all the persons present in the classroom and consider everyone as a potential helper and also as a helpee. In our view, this allows us to have a more complete vision of in-class academic help that covers a variety of situations and interactions.

4.4. Research on in-class academic help involving students with disabilities

In order to detail our approach, we will present below the results of two ongoing PhD research projects, focusing on the analysis of in-class academic help and involving students with disabilities and their teachers.

4.4.1. *Research involving students with autism spectrum disorder (ASD) and their teachers*

4.4.1.1. *Research topic and hypotheses*

This research focuses on the education of students with ASD in French lower secondary school. The objective is to analyze in-class academic help, from two perspectives: that of students with ASD themselves (through the analysis of their help seeking) and that of their teachers (through the analysis of the help they provide these students with).

With regard to help from the perspective of students with ASD, in light of the literature on the social and metacognitive profile of people with ASD (e.g. Goodman 2014; Plumet 2014) and their education (e.g. Emam and Farell 2009), we formulated the following hypotheses:

– these students ask for little help in class;

– their (rare) requests are mainly requests for confirmation;

– their ways of seeking help are atypical.

With regard to teachers, Dunand and Feuilladieu have shown that the help they provide in the classroom can be considered on the basis of their degree of "genericness/specificity" (Dunand and Feuilladieu 2014, p. 122, authors' translation). In other words, types of teacher help can be conceived as a continuum ranging from

general (or generic) help, corresponding to teachers' routines aimed at all students (such as reformulating an oral instruction, providing an additional explanation) to specific help, based on a particular pedagogical method and addressed, in the first place, to students with SEN and/or with disabilities (such as using visual material to support oral instruction, physically inciting the student to begin a task) (Vienneau 2006; Nootens and Debeurne 2010). Since authors (Gombert and Roussey 2007) have shown that help provided by teachers to students with dyslexia in the classroom was mostly general (or generic), we hypothesized that help provided to students with ASD would be of the same type.

4.4.1.2. *Methodology*

The participants were 11 adolescents with ASD and 17 of their teachers, from seven lower secondary schools in the Ile-de-France region (for more details on the student profiles, see Zorn and Puustinen, 2017b). We used two main methods of data collection: interviews and video recordings of class situations. More specifically, we conducted structured interviews with students with ASD and semi-structured interviews with teachers, and we filmed each student with ASD and his or her teacher during six 55-minute scientific[14] teaching/learning sessions (3 in mainstream class and 3 in Ulis).

4.4.1.3. *Results*

The results of the interview analysis (Zorn and Puustinen 2017a) show that adolescents with ASD as well as their teachers reported that these students actually seek help in class. The students themselves reported making requests for confirmation (to find out if they have understood the instructions or completed the task correctly; Puustinen 1998) and using the socially established procedure (raising their hand and waiting for the teacher to call on them) to make their requests. As for their teachers, they reported that these students seek instrumental help (to progress in the task; Nelson-Le Gall 1981) and make requests for confirmation, and that they rarely used the socially established procedure. However, teachers pointed out that all students (whether with disabilities or not) proceeded in the same way in class.

Regarding the help provided in the classroom, students with ASD, as well as their teachers, cited generic helping strategies, such as repeating/reformulating the instructions or providing an additional explanation. At the same time, we found that teachers had difficulty explaining how they helped these students during class time: when asked about in-class academic help, they first spontaneously referred to their pedagogical and material preparations in which they include adaptations to the needs of students with ASD (e.g. preparing accessible learning support materials, placing the student in a specific place in the classroom). They also referred to the design of

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14 The following four scientific disciplines were concerned: mathematics, physics, life and earth sciences, and technology.

the assessments for students with ASD (e.g. not assessing them or lightening their assessment load) and to the presence of teaching assistants (e.g. they were considered as the main helpers in the classroom).

The results of the video analysis (Zorn and Puustinen 2018) corroborate the statements made during interviews with students with ASD and their teachers, regarding the occurrence of help seeking in these students in class. In fact, after viewing the filmed sessions and quantifying their help seeking addressed to the teachers, we can confirm that these students did indeed ask for help from their teachers in class. We noted that important inter-individual differences existed: some students asked for a lot of help while others asked for little or no help at all, whatever the context (Ulis, mainstream class). We also observed that students with ASD mainly formulated requests for confirmation (23%) and instrumental type of requests (22%) and that they made fewer executive requests (i.e. to obtain the answer to the exercise; 1%).

In addition, two help-seeking categories appeared that could not be assimilated to the existing categories in the literature:

– the expression of difficulties in completing the task (e.g. "This exercise is too hard, I am not going to be able to do it"; 31%);

– help seeking regarding the organization of school work and/or its purpose (e.g. "What will we do next?" or "What is the point of watching this video?"; 20.5%).

Concerning the first category (expression of a difficulty), these were requests with an indirect[15] linguistic form (Bernicot and Mahrokhian 1989).

However, Puustinen *et al.* (2011), in a study on lower secondary school students' help seeking on a homework-help forum, showed that a large majority of students avoided the most direct linguistic forms and that they mainly used indirect linguistic forms. According to these authors, this shows that the lower secondary school students spontaneously adopted a "formal" attitude towards an interlocutor they did not know and who had a higher hierarchical status. Could it be inferred from this that the lower secondary school students with ASD studied here adapted their behavior to the status of their interlocutor, given that 31% of their requests were of an indirect linguistic form? Further studies are needed to clarify this question. Concerning the second category, it seems that it corresponds to typical concerns of students with

15 Requests are considered direct when people explicitly say what they want to obtain (e.g. they say "close the window" when they want the other person to close the window), and indirect when people want to obtain something else than what they say (e.g. they say "it is cold" when they want the other person to close the window [Bernicot and Mahrokhian 1989]).

ASD regarding temporal and spatial location on the one hand, the social challenges of learning on the other hand (Jordan and Powell 1997). In fact, unlike other students, students with ASD may have difficulty in integrating the implicit spatial and temporal markers present in a school by themselves (e.g. the length of a lesson and the organization of a classroom) as well as the social and cognitive challenges related to learning that takes place there.

Procedures used by students with ASD to draw their teacher's attention were mostly formulating their request aloud (84%) and, to a lesser extent, calling the teacher by his or her name (7%), raising one's hand (7%), or starting to get angry/agitated (2%). To our knowledge, there exist no studies addressing these behaviors in students with typical development in a classroom context. Nevertheless, the teachers interviewed in our study reported that other students in their class proceeded in the same way when asking for help. It would be interesting to verify this information through classroom observations.

Regarding the help provided by teachers, the video data also confirm what was said during the interviews, namely that teachers provided generic help to students with ASD in the classroom.

More specifically, the results show that, to help students in the classroom, teachers mainly used positive feedback on student production (positive assessment, encouragement; 30%), questioning to stimulate reflection and/or verify student understanding (27%), and additional explanations (16%) and instructions (15%). To a lesser extent, they used providing explicit or implicit cues (5%), (re)engaging the student's attention (4%), signifying the determining characteristics of the task (2%), showing an example or model (0.6%) or establishing physical contact with the student (0.4%). Different interpretations may be suggested. On the one hand, the fact that teachers were poorly trained or untrained in the pedagogical methods specific to students with ASD may help to understand this result. On the other hand, the fact that help resulting from specific methods propose strategies that are unusual or negatively perceived by teachers (e.g. providing a model, starting the task or making inferences in the student's place, making tacit assumptions explicit, physically guiding the student) may also be a barrier to their implementation; or the fact that teachers and/or students themselves do not wish to use this type of help in lower secondary school classrooms, because they consider them stigmatizing during the period of adolescence.

4.4.1.4. *Discussion*

These results on classroom help from two different perspectives (students with ASD and teachers) lead us to the following reflections.

On the one hand, as regards students with ASD, it is interesting and unexpected to note the existence of help seeking among these students in a school context. The fact that some students asked for a lot of help compared to others who asked for very little, leads us to question the help-seeking behavior of typically developing students. There exist no data on actual help-seeking behavior in students with typical development in classroom situations, but the literature shows that in computer-mediated learning situations, they mainly use two types of behaviors: abuse (Murray and VanLehn 2005) or avoidance (Cheong *et al.* 2004) of help seeking. In addition, the fact that help seeking in students with ASD mainly corresponded to confirmation-asking and instrumental type of requests suggests that these students focus primarily on the task to be performed in the classroom, seemingly reflecting a strong interest in school work. More generally, the initiatives of students with ASD in the classroom regarding help show that they were able to take part in classroom exchanges and thus actively participate in the construction of their own learning. This provides new insights into the socio-cognitive and metacognitive profile of these students and the benefits of educating them in an inclusive school context.

On the other hand, with regard to teachers, our results are in line with those obtained in previous research on help for students with disabilities in the classroom (Gombert and Roussey 2007), namely that teachers use generic forms of help, as with other students, to help them to move forward in their learning. However, this does not correspond to the recommendations made in the research on inclusive education for students with ASD or in the report by the *Haute Autorité de Santé* (French Superior Health Authority) and the *Agence nationale de l'évaluation et de la qualité des établissements et services sociaux et médico-sociaux* (French National Agency for the Evaluation and Quality of Social and Medico-social Institutions and Services, 2012). In fact, in certain of these studies (Harrower and Dunlap 2001; Iovannone *et al.* 2003; Crosland and Dunlap 2012; Corneau *et al.* 2014), the specificity of help promoting academic learning in the mainstream environment for these students is well established. In this context, the results concerning the help provided by teachers raise questions, despite our interpretations above. Indeed, we have seen that, from an inclusive perspective, help for student learning should be considered on a continuum, ranging from generic to specific help, so that it can meet the SEN of all students (UNESCO 1994; Dunand and Feuilladieu 2014). However, the teachers in our study, whether special education teachers or not, mainly provided generic help to students with ASD in the classroom. Given the SEN of these students, we question the relevance of the provided help. In this perspective, a thorough analysis of help interactions between teachers and students with ASD would be necessary in order to understand the dynamics involved and to determine whether the help provided (spontaneously and/or following a request) actually responds to the SEN of these students.

4.4.2. *Research involving a student with a visual impairment and a teacher*

4.4.2.1. *Research topic and hypotheses*

This research focuses on the schooling of students with a visual impairment in French elementary school. More specifically, this case study examines the help relationship between a sighted special education teacher and a student with blindness in class when teaching/learning to interpret raised-line drawings.

In schools, it is often necessary to use a medium to enable the transmission of visual information to students with a visual impairment and, *a fortiori*, to students with blindness. It may be a form of verbalization, but this is not always sufficient (Bris and Morice 1995); a model, costly in terms of manufacturing time and/or financial resources; or raised-line drawings. The latter[16] are used, in schools, particularly in geometry and geography. Their manufacturing process requires specific equipment, but the design itself remains very easily accessible to the teacher, and there are websites[17] that offer drawing matrices for students with a visual impairment. This helps to explain their common use in the classroom. At the same time, however, interpreting these drawings is complex and requires teaching/learning (Bris and Morice 1995). We will call such teaching episodes "tactile reading guidance". The objective of this study is to analyze, based on the theory of joint action in didactics developed by Sensevy and Mercier (2007), the help relationship established between the special education teacher and the student with a visual impairment during this guidance activity.

The theory of joint action in didactics has permitted the development of various tools to observe teaching/learning interactions, including help interactions. The approach to in-class academic help and the theory of joint action in didactics are similar, in that they consider the learning situation above all as an interaction between several actors involved in a learning process. We will present two points of view on the topic: that of the student with a visual impairment (through the analysis of his requests for help) and that of the sighted special education teacher providing guidance (through the analysis of the help she provides this student with).

4.4.2.2. *Methodology*

The case study concerns an experimental situation, i.e. a session dedicated to the reading of raised-line drawings and conducted by a special education teacher for

16 More precisely, raised-line drawings used for this research are thermoformed, i.e. printed on a particular paper that is thermo-reactive where black lines are drawn. Once printed, the sheet is passed through an oven to form the relief.

17 See, for example, http://www.inshea.fr/content/documents-adaptes-aux-deficients-visuels.

students with severe academic difficulties (whom we will call the educational difficulties teacher, ED), with a student with blindness who was enrolled in an Ulis program and partially included in the mainstream classroom.

This student was 10 years old, and his visual acuity was less than 1/20, with tubular vision (visual field less than 10 degrees; he also suffered from dyschromatopsia (inability to perceive colors). In other words, he was legally blind. The teacher did not know the student before the session. This session was also conducted by other teachers; for comparison, we will refer to the guidance provided by a special education teacher for students with a visual impairment, whom we will call the VI teacher.

This experimental session took place during school time, outside the classroom. The research facility resembled a memory game: the student needed to assemble identical cards on which there were intertwined geometric figures represented in raised-line drawings. Four criteria were permitted to differentiate the cards from each other: the size, shape, orientation, and thickness of the lines. No instructions were given to the teacher regarding how to conduct the session. Data were collected in the form of films (teaching/learning session and self-confrontation interview) and audio recordings (exploratory interview)[18].

4.4.2.3. *Results*[19]

The interaction lasted 26 minutes and 8 seconds, and included 291 speaking turns. The results first show that the number of requests for help verbalized by the student was low. While we counted 9 questions for 146 speaking turns initiated by the student (6%), we noticed that out of these 9 requests, 6 were actually addressed to the student himself, probably following the teacher's request to explain his procedure. This rare verbalization of requests for help can be explained, at least in part, by the nature of the task itself: instrumental help seeking is necessarily preceded by an awareness of the need for help (Nelson-Le Gall 1985). Yet the activity consisting of interpreting raised-line drawings includes only few markers that could indicate to the student that he is getting lost. However, the video analysis showed a variety of non-verbal attitudes in the student that appeared to be interpreted by the teacher as requests for help: slowing or stopping tactile exploration, pushing a card or leaning over to the teacher, for example.

The ED teacher, on the other hand, most often provided help through verbalization: physical help (e.g. taking the student's hands to place them on the raised-line drawing or making him feel a particular movement) represented 3% of the total session time for her, compared to 11.8% for the VI teacher. In other words,

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18 For more details on the methodology, see Toullec-Théry and Janin (2014).

19 This is a new analysis, focusing on the relationship of help, of previously collected data (see Toullec-Théry and Janin 2014).

the VI teacher used physical help almost four times more often than the ED teacher did. The latter's verbal help often took the form of short, interrogative sentences. In fact, there were 90 interrogative sentences among 145 speaking turns: 51% of the teacher's speaking turns contained at least one question (some speaking turns contained more than two of them). Several explanations can be put forward. On the one hand, being accustomed to work with students with a visual impairment (i.e. blindness or partially sightedness) may lead to greater physical proximity with the students. Guiding them in their movements during the day, for example, may lead to less reluctance towards physical contact on the part of the VI teacher during pedagogical activities. On the other hand, the ED teacher might have used student questioning to guide her own pedagogical action. Finally, the attempts to make the student verbalize were perhaps consistent with the ED teacher's usual teaching practice.

The analysis of the teacher's questions revealed that they can be classified into four main categories. These questions are aimed at, in descending order of importance:

– methodology (for 37% of the questions), for example, "So how are you going to do this, then?", "What are you going to use as a reference point?";

– to have tactile exploration experiences verbalized (34.6%), for example, "How do you know? You must tell me, okay?", "So what can you tell me about it?", "Oh, what are you looking at right now?";

– to accelerate or slow down the didactic time (about 22.3%), for example, "How about double-checking?", "Have you checked everything?", "Let us put them together, okay?";

– to support tactile exploration activity (5.2%), for example, "Maybe we can still continue? So?", "Now, what do we have left?"

A significant proportion of the questions asked by the ED teacher (more than 70%) was thus intended to provoke or support the student's verbalization.

4.4.2.4. *Discussion*

These results give rise to some observations. The question arises of how to understand the teacher's objective when she insisted on having the student verbalize both his methodology and what he perceived during the tactile exploration. It seems at first sight that the verbalization she required from the student was intended to put his strategy into words in order to make him aware of it. Besides, during the self-confrontation, this appeared to be a common practice for her, consistently with previous research describing the professional gestures of special education teachers for

students with severe academic difficulties[20] (Toullec-Théry 2012). However, the insistence with which she requested specific verbalization (a high number of requests as indicated above) of what was perceived by the student seems to us to have another cause, which could stem from the nature of the student's disability but also from the tactile mode used.

According to Sensevy (2011), asymmetry in the teacher–learner relationship is mainly due to the fact that, in a didactic situation, the teacher knows what the student does not. In our specific situation, however, the asymmetry between the teacher and the student seemed to be erased, or even temporarily reversed, in the sense that we cannot quite say that the ED teacher knew what the child did not know, or even that she was able to do what the child was not able to do. Indeed, a teacher generally knows not only the result he or she wants to achieve, but also the various ways of achieving it: strategies, rationale, trials and errors, etc. However, this is not entirely the case here, since the ED teacher, who was sighted, considered she did not master tactile exploration as well as the student. The asymmetry here was reversed locally, or temporarily: the student knew (in terms of know-how) what the teacher did not know. This situation is reminiscent of reverse tutoring between students, where tutees (who are also high-achieving students) take charge of the situation so that the tutors (low-achieving students) become able to help them (Verba and Winnykamen 1992).

The fact that the teacher could not directly access the student's perceptions made it difficult for her to anticipate the student's requests for help. In fact, the teacher had access to no indicator of the student's tactile perception other than the verbalization she asked him to produce. And yet, if we wish to provide effective help, it is necessary to be able to modulate our responses according to the needs of the learner to whom we provide this help (Puustinen 2012). Therefore, in order to access what the student perceives, the teacher had no other option than to have him verbalize his perceptions throughout the session. This allowed her to judge the relevance of the help she wished to provide, and thus adjust to the student's needs.

We believe that, in this type of specific interaction, requests for help are not unidirectional but that they should be considered as a flow between the student and the teacher. We therefore propose the model presented in Figure 4.1.

20 Special education teacher in charge of pedagogical help for students with persistent learning difficulties. This is the former name for special education teachers for pupils with serious educational difficulties.

The bottom arrow represents the requests for help that the teacher made to the student, whether thoughtfully or not. The upper arrow represents the requests for help that the student made to the teacher, whether thoughtfully or not.
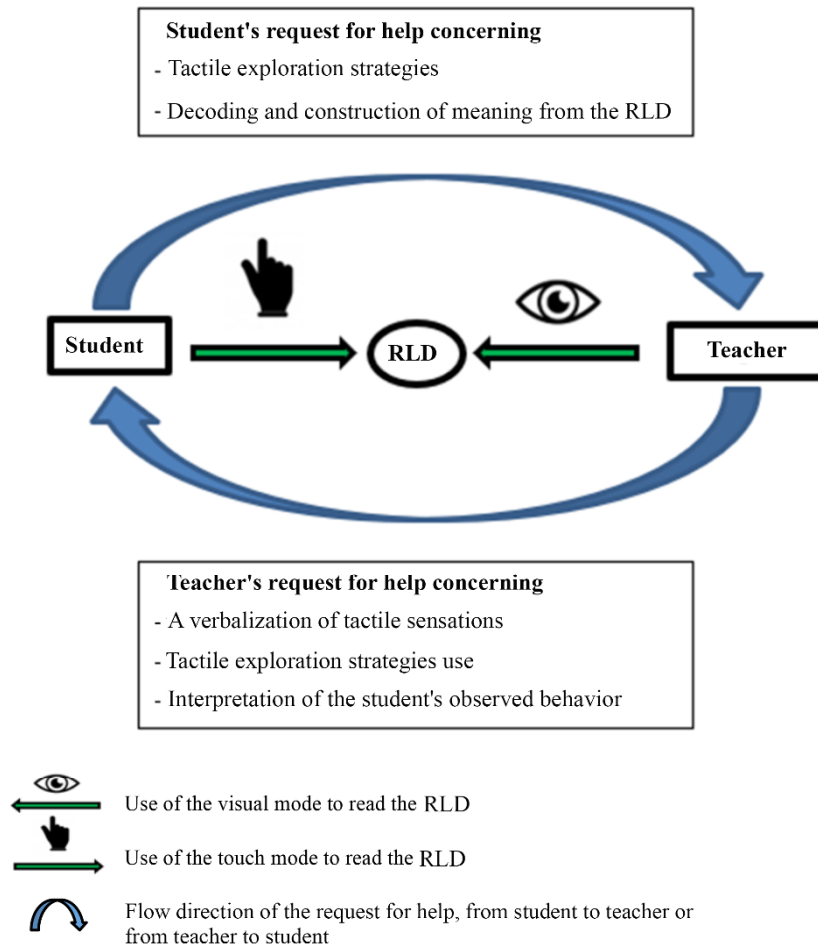

Figure 4.1. *Model of the flow of help in a dyadic situation dedicated to the interpretation of raised-line drawings (RLD)*

Finally, in our case, the student made few verbal requests. Requests for help often took the form of hesitations or uncontrolled explorations, or were manifested by difficulties in decoding tactile perceptions. The teacher seized the student's signals, interpreted them and entered the help interaction by adapting the environment, giving tactile and semantic references, helping to structure tactile exploration, etc. When the student's signals were insufficient for her, she asked for help from him, mostly in the form of questions about what he could perceive (touch) or conceptualize (exploration strategies). This two-way flow of requests for help (not only from student to teacher but also from teacher to student) seems to require further investigation.

4.5. Conclusion

After presenting the development of legislation in France and its implications on the schooling of pupils with disabilities, we questioned the concept of in-class academic help in light of French scientific literature, from the point of view of the helper (e.g. teacher; see Wood *et al*. 1976) as well as that of the helpee (student; see Nelson-Le Gall 1981, 1985). The presentation of the two doctoral research projects further allowed us to highlight those characteristics of these help interactions that play an essential role in the construction of learners' knowledge in the context of educating students with disabilities.

In terms of results, the first research, focusing on the schooling of students with ASD in French lower secondary school, showed that, contrary to what existing research on people with ASD may suggest, the lower secondary school students with ASD in our study actively sought help from the teacher in the classroom. Moreover, the fact that their requests for help mainly consisted of confirmation-asking and instrumental help seeking suggests that these students focused primarily on the task at hand.

As for the second study, the results showed that the asymmetry inherent in any tutoring situation could be reversed: sometimes, the student with blindness knew what the sighted special education teacher could not know. This result suggests that help seeking should not be considered unidirectional, but as a flow between the student and the teacher. Moreover, it would be interesting to understand why the teacher interpreted (or not) certain non-verbal attitudes as requests for help, and how these interpretations were related (or not) to her practical epistemology. Still another question would be to identify the observable effects of these interpretations on the flow of the interaction during the planned teaching session. In the near future, we hope to show that this flow of the help seeking is probably not limited to the specific situation we have observed, but also occurs in dyadic – or even collective – situations in the mainstream classroom.

Both studies also showed the importance of pursuing research on this topic. In fact, it appears, for example, that no research has analyzed students' help-seeking behavior filmed in real class situations in typically developing students, nor any work has identified the flow of help seeking in real classroom situations. Such extensions of the research would not only contribute to refining theoretical knowledge about the role of the different people involved in the academic help process in class, but also to improving the schooling conditions of students, whether with disabilities or not. Help – and more particularly seeking it – in class concerns all learners. Such work, rooted in inclusive education, would make it possible to consider the construction of training contents for teachers.

4.6. References

Barrère, A. (2013). La montée des dispositifs: un nouvel âge de l'organisation scolaire. *Carrefours de l'éducation*, 36, 95–116.

Beaucher, H. (2012). La scolarisation des élèves en situation de handicap en Europe. Synthèse documentaire, Centre international d'études pédagogiques, Sèvres. Available at: https://www.ciep.fr/sites/default/files/migration/dossierdoc/docs/synthese-documentaire-scolarisation-eleves-situation-handicap-en-europe.pdf.

Beaudichon, J., Verba, M., and Winnykamen, F. (ed.). (1988). Interactions sociales et acquisitions de connaissances chez l'enfant. Une approche pluridimensionnelle. *Revue Internationale de Psychologie Sociale*, 1, 129–141.

Bernicot, J., Mahrokhian, A. (1989). Asking and insisting after a refusal: how do 6- to 7-year-olds proceed? *International Journal of Psychology*, 24, 409–428.

Berzin, C. (2012). Tutorat entre pairs et théorie implicite d'enseignement. *Revue française de pédagogie*, 179, 73–82.

Bris, M., Morice, J.-C. (1995). Conception du dessin en relief pour les personnes non voyantes. *Le courrier de Suresnes*, 63, 5–16.

Bucheton, D., Soulè, Y. (2009). Les gestes professionnels et le jeu des postures des enseignants dans la classe: un modèle de préoccupations enchâssées. *Éducation et Didactique*, 3(3), 29–48.

Chauvot, N. (2011). Habiletés éducatives et gestes professionnels d'ajustement d'un auxiliaire de vie scolaire accompagnant un élève autiste: étude de cas. *Travail & formation en éducation*, 8.

Cheong, Y., Pajares, F., and Oberman, P.S. (ed.). (2004). Motivation and Academic Help-Seeking in High School Computer Science. *Computer Science Education*, 14(1), 3–19.

Communauté européenne – Direction générale XXII (1996). Charte du Luxembourg. Document, Communauté européenne.

Connac, S. (2018). Ce que disent des élèves sur les classes coopératives en collège et lycée. *Tréma*, 50.

Corneau, F., Dion, J., Juneau, J., Bouchard, J., and Hains, J. (ed.). (2014). Stratégies pour favoriser l'inclusion scolaire des enfants ayant un trouble envahissant du développement: recension des écrits. *Revue de psychoéducation*, 43, 1–36.

Crosland, K., Dunlap, G. (2012). Effective strategies for the inclusion of children with autism in general education classrooms. *Behavior Modification*, 36, 251–269.

Dunand, C., Feuilladieu, S. (2014). Les aides pédagogiques aux élèves à besoins éducatifs particuliers: pratiques génériques ou spécifiques ? *La nouvelle revue de l'adaptation scolaire*, 65, 113–126.

Emam, M.M., Farrell, P. (2009). Tensions experienced by teachers and their views of support for pupils with autism spectrum disorders in mainstream schools. *European Journal of Special Needs Education*, 24, 407–422.

Félix, C., Saujat, F., and Combes, C. (ed.). (2012). Des élèves en difficulté aux dispositifs d'aide: une nouvelle organisation du travail enseignant ? *Recherches en éducation*, 4 (hors-série), 19–30.

Francols, N. (2012). *De la difficulté d'aider en classe: renforcer l'interaction élèves-enseignants. Je t'aide moi non plus*. Chronique sociale, Lyon.

Gombert, A., Roussey, Y. (2007). L'intégration en classe ordinaire d'élèves souffrant de troubles spécifiques sévères du langage écrit: adaptations pédagogiques des enseignants de collège et de primaire. *Repères*, 35, 233–251.

Harrower, J.K., Dunlap, G. (2001). Including children with autism in general education classrooms: a review of effective strategies. *Behavior Modification*, 25, 762–784.

Haute Autorité de Santé, Agence nationale de l'évaluation et de la qualité des établissements et services sociaux et médico-sociaux (2012). Autisme et autres troubles envahissants du développement: interventions éducatives et thérapeutiques coordonnées chez l'enfant et l'adolescent. Recommandation de bonne pratique. Available at: https://www.has-sante.fr/upload/docs/application/pdf/2012-03/recommandations_autisme_ted_enfant_adolescent_interventions.pdf.

Iovannone, R., Dunlap, G., Huber, H., and Kincaid, D. (ed.). (2003). Effective educational practices for students with autism spectrum disorders. *Focus on Autism and Other Developmental Disabilities*, 18, 150–165.

Jordan, R., Powell, S. (1997). *Les enfants autistes, les comprendre et les intégrer à l'école*. Elsevier Masson, Issy-les-Moulineaux.

Lescouarch, L. (2018). *Construire des situations pour apprendre: vers une pédagogie de l'étayage*. Éditions Sociales Françaises, Paris.

Murray, R.C., Vanlehn, K. (2005). Effects of dissuading unnecessary help requests while providing proactive help. Speech. In *International Conference on Artificial Intelligence in Education (AIED)*. AIED, Amsterdam.

Nelson-Le Gall, S. (1981). Help-seeking: an understudied problem-solving skill in children. *Developmental Review*, 1, 224–246.

Nelson-Le Gall, S. (1985). Help-seeking behavior in learning. *Review of Research in Education*, 12, 55–90.

Nootens, P., Debeurme, G. (2010). L'enseignement en contexte d'inclusion: proposition d'un modèle d'analyse des pratiques d'adaptation. *Nouveaux cahiers de la recherche en éducation*, 13(2), 127–144.

Numa-Bocage, L. (2007). La médiation didactique: un concept pour penser les registres d'aide de l'enseignant. *Carrefours de l'éducation*, 23, 55–70.

Petitfour, E. (2018). Quel accompagnement en géométrie pour des élèves dyspraxiques? *Grand N*, 101, 45–70.

Pierrisnard, C., Vannier, M.-P. (2012). Spécificité des dimensions temporelle et contextuelle de l'aide spécialisée à dominante pédagogique. *Recherches en éducation*, 4 (special edition), 111–119.

Piquée, C., Viriot-Goeldel, C. (2016). La fréquentation des dispositifs d'aide aux élèves en difficulté au cours préparatoire: un révélateur de l'organisation scolaire contemporaine. *Revue française de pédagogie*, 194, 47–70.

Puustinen, M. (1998). Help-seeking behavior in a problem-solving situation: development of self-regulation. *European Journal of Psychology of Education*, 13, 271–282.

Puustinen, M. (2012). Aider et être aidé: l'importance de la notion d'aide dans les dispositifs d'apprentissage en ligne. *Revue internationale des technologies en pédagogie universitaire* (RITPU), 9(3), 6–9.

Puustinen, M. (2013). *La demande d'aide chez l'élève: avancées conceptuelles, méthodologiques et nouvelles données*. L'Harmattan, Paris.

Puustinen, M., Bernicot, J., and Bert-Erboul, A. (ed.). (2011). Written computer-mediated requests for help by French-speaking students: an analysis of their forms and functions. *Learning & Instruction*, 21, 281–289.

Rivière, C., Lafont, L. (2014). Favoriser l'inclusion d'élèves porteurs de troubles cognitifs par le tutorat en EPS. *Carrefours de l'éducation*, 37, 175–190.

Roiné, C. (2012). Analyse anthropodidactique de l'aide mathématique aux « élèves en difficulté »: l'effet Pharmakéia. *Carrefours de l'éducation*, 33, 131–147.

Sensevy, G. (2011). *Le sens du savoir*. De Boeck, Brussels.

Sensevy, G., Mercier, A. (2007). *Agir ensemble, l'action didactique conjointe du professeur et des élèves*. PUR, Rennes.

Suchaut, B. (2010). L'aide aux élèves: diversité des formes et des effets des dispositifs. *Dialogue*, 135, 4–10.

Terrat, H. (2015). Apports et limites des TICE dans les apprentissages de la langue chez les élèves handicapés moteurs présentant des troubles associés: utilisation des traces numériques pour favoriser l'apprentissage de la langue écrite. PhD thesis, Université Lyon 2, Lyon.

Thomazet, S., Merini, C. (2015). L'école inclusive comme objet frontière. *La nouvelle revue de l'adaptation et de la scolarisation*, 70-71, 137–148.

Toullec-Théry, M. (2012). Dans le regroupement d'adaptation, existe-t-il des régimes d'attention spécifiques aux maîtres spécialisés à dominante pédagogique ? In *Jeux de savoir*, Gruson, B., Forest, D., Loquet, M. (eds). PUR, Rennes.

Toullec-Théry, M., Janin, F. (2014). Lecture d'images tactiles et guidance par une enseignante spécialisée E. *La nouvelle revue de l'adaptation et de la scolarisation*, 66, 93–111.

Toullec-Théry, M., Nédélec, I. (2008). Étude et catégorisation de pratiques effectives entre professeurs et auxiliaires de vie scolaire (AVS) à l'école primaire. *Alter – Revue européenne de recherche sur le handicap*, 2(4), 337–358.

UNESCO (1994). The Salamanca statement and framework for action on special needs education, adopted by the World Conference on Special Needs Education: Access and Quality [Online]. United Nations Educational, Scientific and Cultural Organization, Ministry of Education and Sciences (Spain), Salamanca. Available at: http://www.unesco.org/education/information/nfsunesco/pdf/SALAMA_E.PDF.

Vandromme, L. (1993). Procédures d'aide et adaptation à l'interlocuteur autistique chez l'enfant de six à huit ans. *Revue internationale de psychologie sociale*, 1, 57–74.

Vannier, M.-P. (2006). Fonctions critiques de la tutelle auprès d'élèves en échec scolaire. *Nouveaux cahiers de la recherche en éducation*, 9(2), 169–186.

Verba, M., Winnykamen, F. (1992). Expert-novice interactions: influence of partner status. *European Journal of Psychology of Education*, 7(1), 61–71.

Vienneau, R. (2002). Pédagogie de l'inclusion: fondements, définitions, défis et perspectives. *Éducation et Francophonies*, 30(2), 257–286.

Viriot-Goeldel, C. (2007). Apprentis-lecteurs en difficultés: quels types d'aide ? Essai d'analyse théorique et praxéologique de l'aide apportée aux élèves en difficulté dans les classes de l'enseignement primaire en France, au Québec et dans le Bade-Wurtemberg. *Carrefours de l'éducation*, 1(23), 25–38.

Viriot-Goeldel, C. (2013). Prévenir l'illettrisme dès l'école primaire: analyse du cas français à la lumière de la comparaison internationale. *Cahiers de la Recherche sur l'Éducation et les Savoirs*, 12, 59–70.

Weil-Barais, A., Resta-Schweitzer, M. (2008). Approche cognitive et développementale de la médiation en contexte d'enseignement-apprentissage. *La nouvelle revue de l'adaptation scolaire*, 42, 83–98.

Winnykamen, F. (1992). Interactions de guidage et interactions imitateur-modèle en situation d'acquisition d'un savoir-faire. Speech, International Society for the Study of Behavioural Development, Brussels.

Wood, D., Bruner, J.S., and Ross, G. (ed.). (1976). The role of tutoring in problem solving. *Journal of Child Psychology and Psychiatry*, 17, 89–100.

Zorn, S., Puustinen, M. (2017a). L'aide aux apprentissages: le cas des collégiens avec un trouble du spectre de l'autisme et de leurs enseignants. *Recherches en Éducation*, 30, 111–124.

Zorn, S., Puustinen, M. (2017b). Le profil adaptatif de collégiens avec un trouble du spectre de l'autisme: le lien avec le niveau et le parcours scolaire. *Approche neuropsychologique des apprentissages chez l'enfant (ANAE)*, 150, 575–582.

Zorn, S., Puustinen, M. (2018). Academic help seeking in French lower secondary school students with an autism spectrum disorder. Speech, European Research Educational Association, Bolzano.

Motivation and Help-seeking: The Field of Art

5.1. Introduction

Learning systems have evolved rapidly in recent decades through new technologies, and online learning is becoming increasingly prevalent (Goldberg and Reimer 2006). Some even argue that these new learning environments and mobile tools (digital tablets, smartphones, etc.) are profoundly changing the daily practice of education (Aleven *et al.* 2003). However, the use of these devices presupposes that the learner is able to manage his or her own learning. In order to assist the learner in his or her independent learning, help is often offered. The learner can then ask for help, consider it and take ownership of its content.

Help-seeking and the use of help refer to a strategy to regulate learning by requesting additional knowledge, or by identifying a need for knowledge and asking a question or questions that help to understand or solve a problem (Nelson-Le Gall 1985). Numerous studies have shown that the strategy for help-seeking is positively related to performance (Karabenick 1998; Wood and Wood 1999; Renkl 2002; Kitsantas and Chow 2007).

However, a main result remains: help-seeking is rarely or poorly used, hindering learning (Aleven *et al.* 2003; Puustinen *et al.* 2008; Karabenick and Dembo 2011). Several types of inappropriate behavior in the use of help have been identified in the literature (e.g. Aleven *et al.* 2003). For example, some students never ask for help when they need it, while others systematically ask for it even when they know the answer. Others do not ask questions that would correspond to their need for knowledge. This difficulty in self-assessing needs and regulating learning led the

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authors to question the factors impacting intentions to help-seeking and effective behaviors of help-seeking. However, while the intentions have been widely studied, the same cannot be said for the effective implementation of help-seeking behaviors (e.g. Huet *et al.* 2013).

Thus, in this study, we are interested in the impact of motivational variables on the actual behavior of help-seeking. The motivational factors studied will be achievement goals (Ames 1992) and perceptions of the threat associated with help-seeking (Ryan & Pintrich 1997). In addition, since perceptions may depend on the learning context, we will examine the results found in the literature about context that promote appropriate behavior of help-seeking. Based on these initial findings, the general question we wish to answer is: which motivational and contextual factors impact help-seeking?

In order to answer this question, we will first present the results of research dedicated to help-seeking. Motivational and contextual factors will be studied in order to understand their functioning and impacts. The hypothesis underlying this study will be elaborated by referring to this theoretical framework. A methodology will then be described and detailed to test our hypotheses. It will be followed by the results associated with the study and discussion of them.

5.2. Research problem

5.2.1. *Help-seeking in learning*

While, for a long time, help-seeking was viewed negatively, as an indicator of dependence (Macoby and Masters 1970), it now occupies an important place in the learning process (Mulet 2016). Understanding how it works and its limitations allows us to target the variables that could affect this learning strategy.

In order to understand how it works, we can refer to Nelson-Le Gall's model. In the 1980s, this author modeled the self-regulation strategy that constitutes help-seeking, which includes five processes (Nelson-Le Gall 1981):

  – awareness of need for help;

  – decisions about whether or not to seek help;

  – identification and selection of potential helper(s);

  – strategies for enlisting helpers;

  – evaluative responses.

The number of steps by which the participant must go through increases the risk of failing to request appropriate help. Some factors can hinder the smooth running of the steps. This may be because the individual cannot realize his or her need for help, or because he or she thinks that asking for help would indicate incompetence or prevent him or her from succeeding alone. In the last two cases, avoidance of help-seeking refers respectively to the perception of the act of requesting help as a threat to his or her competence and to his or her need for autonomy. In addition, the decision to seek help may also be affected by the learner's motivation or the context in which the request for help is made.

5.2.2. *Factors impacting help-seeking*

In reference to Newman (1990), the learner's decision to seek help is filtered through an emotional system that includes motivational factors. Among these, two particular factors have been studied in the literature: achievement goals (Ames 1992) and help-seeking perceptions as a threat to one's self-esteem or as a threat to the need for autonomy (Butler 1998).

5.2.2.1. *Achievement goals and help-seeking*

Achievement goals are considered as motivational factors because they are defined as the reasons that lead an individual to engage in a task (Ames 1992). These goals can be of two different types and lead to different behaviors.

First of all, there are the performance goals, reflecting goals focused on social comparison (Dweck and Leggett 1988; Ames 1992). An individual with performance goals wants to obtain positive results to demonstrate his or her performance to others, peers, teachers, parents, etc. The second type of achievement goal is the mastery goal. This reflects a willingness to master a subject and to learn new knowledge and skills. Here, a self-referenced comparison is made, and the learner's goal is to improve his or her knowledge and to enjoy learning. These different goals are themselves subdivided into two other dimensions: approach and avoidance. The approach goals are focused on behavior characterized by the search of positive judgment or event, and avoidance goals are characterized by avoiding negative judgment or negative event. These two dimensions therefore constitute two ways of approaching an event, two interpretations of a situation, leading to requesting help or not. The effect of the goals was studied, on the one hand, in relation to the intentions of requests for help and, on the other hand, to the actual behavior of help-seeking, and found different results. Since intentions generally do not predict actual behavior in requesting help (Huet *et al*. 2013), we will focus our literature review on the actual behavior of help-seeking.

The results relating to the relationship between achievement goals and the actual help-seeking are different from those obtained from intentions. Indeed, most authors find that there is no significant relationship between the mastery goal and the actual use of help (Nelson-Le Gall and Jones 1990; Martinez-Miron *et al*. 2005; Bartholome *et al*. 2006; Huet *et al*. 2011, 2016). Regarding the performance goal, few studies have examined its relationship to the actual help-seeking. The results show that there is no significant relationship between the performance goal (without distinction between approach and avoidance) and the actual use of help (Martinez-Miron *et al*. 2005; Clarebout and Elen 2009).

Another motivational factor is related to help-seeking: the perception of help-seeking as a threat. Indeed, while achievement goals motivate the intention to ask for help, they can also generate a negative emotional cost (Butler 1998; Newman 1990) leading to avoidance behavior relating to help-seeking.

5.2.2.2. *Perceptions of the threat associated with help-seeking*

Help-seeking has a significant emotional cost for individuals seeking it (Nelson-Le Gall 1980). They assess help-seeking according to what it means for them in terms of benefits and costs (Ryan and Pintrich 1997). Help-seeking may be perceived as beneficial or threatening. When it is perceived as threatening, two forms of threats have been identified and are related to competence and the need for autonomy.

In the first case, threat of competence, help-seeking will be perceived as threatening to the individual's self-esteem (Newman 1990) as his or her skills will be questioned. In this case, if an individual avoids help-seeking, it is because of fear of judgments from others and fear of being perceived as incompetent.

Concerning the threat of autonomy, this refers to a mismatch between the individual's desire for autonomy, wanting to succeed alone, and his or her need for help. Then, individuals will tend to solve their difficulties on their own, or to request instrumental help. Avoidance behavior may be due to the perception of a threat to their competences, avoiding appearing incompetent, or to one's autonomy, avoiding not succeeding alone.

Few studies have examined the impact of a perceived threat on the actual use of help. The majority of research focuses on the intentions of requesting help (Huet *et al*. 2011; Collazo *et al*. 2012). The few results show a negative relationship between intentions to help-seeking and

– the perception of a threat to the need for autonomy (Butler 1998);

– the perception of a threat to competence (Newman 1990; Butler and Newman 1995; Ryan and Pintrich 1997).

As for the relationships between the goals and the actual act of using help, there is no significant relationship between perceptions of a threat in the act of requesting help and the actual use of the help (Huet *et al*. 2011). The small number of studies that have studied these relationships on the actual use of help suggests that further analysis of these relationships should be carried out.

In addition, since help-seeking brings an emotional cost that may generate perception of help-seeking as threatening, we can then ask ourselves whether it is possible to reduce this perception of threat and this emotional cost through the context of help-seeking.

5.2.2.3. *Context and help-seeking*

The research that examined the effect of context on help-seeking compared two contexts: a public context, in which the learner can ask for help "face-to-face", with the teacher and/or other students versus a private context, in which the request for help is anonymous, often using a computerized environment or technological tools. The authors generally hypothesize that help-seeking will be more common in an anonymous context, removing social barriers (Graessen and McMahen 1993), than in a public context. On anonymous context, avoidance would be reduced by the asynchronous communication tools used for help-seeking. Combined with anonymity, these asynchronous tools would reduce the threat of asking a question and allow more time to be spent formulating help-seeking compared to a context of public help-seeking in front of an entire class or online. In accordance with this hypothesis, some authors find less avoidance of help in anonymous conditions (Karabenick and Knapp 1988). In this context, the authors compared learners' help-seeking (self-reported measures) according to the context, whether the help was available on a computer or accessible from another person. The results show that 86% of participants reported seeking help when they could do so on a computer, and 36% reported seeking it when they had to do so from another person. On the other hand, other authors (e.g. Mahasneh *et al*. 2012) have found the opposite results. This outcome, not in line with expectations, is explained by the authors as a lack of knowledge from the learners about technological tools, as well as due to the fact that the learner knows that everything he or she does will be traced and recorded, or even as a result of a lack of skill in the written formulation of his or her help-seeking.

However, help-seeking in computer environments for human learning may take forms other than writing in natural language. Indeed, the designers of digital learning environments often add aids that only have to be clicked on to consult, thereby removing the reluctance to make an explicit request in writing. This device is all the more favorable to learning when the learner has a low level of knowledge about the to-be-learned content. Indeed, simply having to click on a "help" button frees up cognitive resources for the content to be learned (Schwonke 2015).

Other tools are also implemented in a computerized context, allowing the system to propose a help in a timely manner (Schwonke *et al*. 2013). Unlike the help available at any time, through the button, this help refers more to a prompting to help-seeking. When the system detects a difficulty for the learner, for example, to answer a question, it can suggest him or her that help is available. This differs from the help offered through an available button and from the help imposed.

As a result, the context of help-seeking may be public, as usually happens in the classroom, or anonymous, as in some digital learning environments. Help-seeking may be in the form of oral questions, be written in full in writing or be in the form of a clickable button. Help can be provided at the learner's request, or proposed or imposed by the computer system or from traces left by the learner in his or her use of the environment. These contextual characteristics external to the learner would have an impact on the learner's perceptions of the act of asking for help.

5.2.3. *Goals, perceptions, context and help-seeking*

Motivational factors are involved in the failure or success of the implementation of help-seeking, and achievement goals and the perception of the threat associated with the request for help are essential. However, this perception of the threat may vary depending on the context in which it is carried out. To facilitate help-seeking, we have seen that perceptions of the threat to competence can be reduced when the context is anonymous (Keefer and Karabenick 1998; Aleven *et al*. 2003; Kitsantas and Chow 2007). It appears that the cost of the perceived threat is reduced in the anonymous context of this learning environment (Lee 2002).

Regarding the impact of achievement goals on help-seeking in digital learning environment, it is difficult to make predictions due to the lack of existing research and their divergent results. Although most research indicates a lack of relationship between achievement goals and requests for actual help (e.g. Bartholomé *et al*. 2006), a few studies (e.g. Noury *et al*. 2007) found a significant relationship.

Finally, the achievement goals would be associated with the perceived threat associated with help-seeking. Perceiving the threat would mediate the relationship between achievement goals and intentions to request help (Newman 1990; Ryan and Pintrich 1997; Tanaka *et al*. 2002; Karabenick 2003; Mulet 2016). As a result, the perception of the threat associated with help-seeking would explain the relationship between the achievement goals and the request itself (Karabenick 2003; Huet *et al*. 2011; Tanaka *et al*. 2013). Indeed, mastery goals would be positively correlated with the perception of the threat to autonomy, while performance and avoidance goals would be positively correlated with the perception of the threat to competence (Huet *et al*. 2011).

This leads us to our general hypothesis, which is: the actual act of help-seeking is impacted by the context, private (anonymous via a computerized environment) versus public (in front of others), but not directly by achievement goals and perception of the threat. However, the perception of threat would be impacted by the context in which help-seeking is made, but not by the achievement goals. More specifically, we expect:

– in a private context, the number of help-seeking will be higher than that obtained in a public context (Karabenick and Knapp 1988);

– perceptions of threat will be higher in a public context than in a private one (Keefer and Karabenick 1998; Aleven *et al*. 2003; Kitsantas and Chow 2007);

– the relationships between perceptions of threat and actual help-seeking are difficult to predict, due to the limited number of studies that analyzed this relationship. The relationship between the achievement goals and the actual act of requesting help seems also difficult to predict given the lack of literature.

These hypotheses and relationships were tested as part of the learning of artistic knowledge during a museum visit.

5.3. Methodology

5.3.1. *Presentation of the population*

The participants were 41 students enrolled in bachelor's and master's degrees in human sciences at the University of Toulouse Jean-Jaurès. They were randomly assigned to one of the two groups, in a public context (n = 20) and in a private context (n = 21). In both groups, students had the same task of visiting and completing knowledge-based questionnaires. In pre-testing, we verified their level of prior knowledge of Italian Renaissance art and their own estimate level of knowledge on this subject. This is to ensure that there is a real need for help and, when analyzing help-seeking, we do not consider avoidance to be a behavior that actually results from a lack of need for help (Huet *et al*. 2011). In addition, we controlled age and level of education (19 students in their first two years of study, and 24 students in their third or fourth year of study), to get a homogeneous population.

	M	SD
Previous level of knowledge in art (min. 0, max. 1)	0.23	0.45
Self-assessment of knowledge in art (min. 0, max. 10)	2.35	1.61
Age (min. 18, max. 30)	20.87	1.24

Table 5.1. *Means (M) and standard deviations (SDs) of the controlled variables: age, knowledge level, self-assessment of knowledge level*

5.3.2. *General description of the task*

The task is in the field of arts education according to the French charter dated July 8, 2016, for which the objective is to make cultural and artistic education more accessible to everyone. In this way, participants must attend an experimental museum visit during which the experimenter presents four works of art. Participants must acquire knowledge about these works of art. Following this guided tour, participants are asked questions about each work of art to measure performance and motivational variables.

5.3.3. *Materials, treatment and measurements*

5.3.3.1. *Works of art*

The experimental museum visit is composed of four works of art from the Italian Renaissance. The four selected works are based on the study by Di Serio *et al.* (2012). The works represented are Michelangelo's *David* (1504), Leonardo da Vinci's *Saint John the Baptist* (1513) and *Saint Peter's Basilica* (1506) and Raphael's *Athens School* (1510). These works are in the form of posters displayed in a room of the CLLE-LTC research laboratory serving as an experimental museum. There are a total of six posters (one per work, except for St. Peter's Basilica, which had three).

5.3.3.2. *Manipulating the learning context*

All participants have at their disposal an HP tablet, a 12-inch Pro Slate with Android. There are six in total: five for the participants and one for the experimenter. The tablets contained the various questionnaires used before and after the visit to measure our variables. The tablets also contained an application used during the visit, on which participants have to answer questions and they can make requests for help-seeking. Under all conditions, participants perform the test in groups of five, randomly divided into two groups. The PU group corresponds to the visit in a PUblic context (n = 20). The PRI group corresponds to the visit in a PRIvate context (n = 21). Their main task of visiting and completing is the same, but their means of requesting help differ. In PU conditions, in a public context, if the participant wishes to obtain help, he or she must speak out loud in front of his or her classmates, then send his or her request for help in writing to the experimenter via the tablet. Following this, the experimenter sends the answer, always in writing, via the tablet. No response is sent if the oral demonstration is not formulated. PRI group participants make the request for help in the same way, via the tablets, but without any previous oral manifestation. The guide/experimenter responds to each request without knowing who the requester is unlike those of the PU group. Help-seeking and responses under both conditions are made synchronously.

5.3.3.3. *Measuring help-seeking*

In order to measure help-seeking, the tablets were equipped with an application to collect all traces of activity, i.e. all actions taken by the participant via the tablet. As a result, when a participant makes a help-seeking, it is recorded and posted automatically. To seek help, participants in both contexts must click on a button and then write their request by targeting a particular area of the work on which they want information (e.g. the "hair" of *Saint John the Baptist*). The help-seeking, available through a button and involving a simple formulation, only writing about an area of the work, aims to reduce the cognitive resources used in requesting help and facilitate the learning of the content (Schwonke 2015).

5.3.3.4. *Measures of threat perception associated with help-seeking*

The questionnaire, a French adaptation by Huet *et al*. (2011), aimed to measure perceptions of the threat associated with help-seeking. It is composed of seven items. Three of these seven items based on Butler (1998) measured the perceived threat to the need for autonomy, such as: "Even though I had difficulties, I did not seek help, because I preferred to try to answer the questions about these works by myself, without help." The threat to competence was measured by four options based on Karabenick (2003) such as: "I would have felt incompetent if I had to tell others that I needed to seek help to answer questions about these works of art." The response to the options was on a scale from 1 ("completely wrong for me") to 10 ("completely true for me").

5.3.3.5. *Measures of achievement goals*

Achievement goals were measured by a French version, the AGQ_R questionnaire (Darnon and Butera 2005), adapted from Elliot and Murayama (2008), which aims to identify individuals' achievement goals. This questionnaire consists of 12 items, six of which measure mastery goals (MGs) and six performance goals (performance-approach goals, PPAvG; performance-avoidance goals, PAvG). Example MG: "I have tried to understand the content of each work as thoroughly as possible" or "my goal has been to avoid learning less than it is possible to learn about these works." Example PPAvG: "My goal was to be able to answer questions about these works well in relation to other students." Example PAvG: "My goal was to avoid performing poorly on questions about the works compared to other students." For each of the options, participants were asked to position themselves on a Likert-type scale, ranging from 1 "completely wrong for me" to 10 "completely true for me".

5.3.3.6. *Performance measurement*

In order to measure performance, a knowledge questionnaire was administered beforehand, consisting of two questions per work, in order to ensure the level of the individuals in relation to the works presented. The same questionnaire was then used

during the main task in the museum visit situation, allowing the results to be compared and the actual performance to be observed. The questions were constructed in such a way that, without help and without prior knowledge, it was impossible to answer them. For example, for *David*, a question is: "How does the sculpture of *David* express brute force?" Students with the necessary knowledge and who did not require help were excluded from data processing.

5.3.4. *Procedure*

First, participants were invited to familiarize themselves with the tablet. The purpose of this familiarization phase is to avoid unnecessarily increasing the cognitive load by learning to master a new tool (Tulvinen and Sweller 1999). After this familiarization, participants were instructed to complete a consent form, to answer descriptive questions and complete the prior knowledge questionnaire.

At the end of this preliminary data collection phase, the main task was presented to them and the instructions are given. The task of listening to presentations on four works of art, followed by the completion of questions, containing eight questions in total, two per work. For each of the two contexts, the procedure was essentially the same. The works were presented one by one and between each of the presentations (three minutes for each work), they had seven minutes to complete the two questions related to the work presented using the tablet (Figure 5.1).
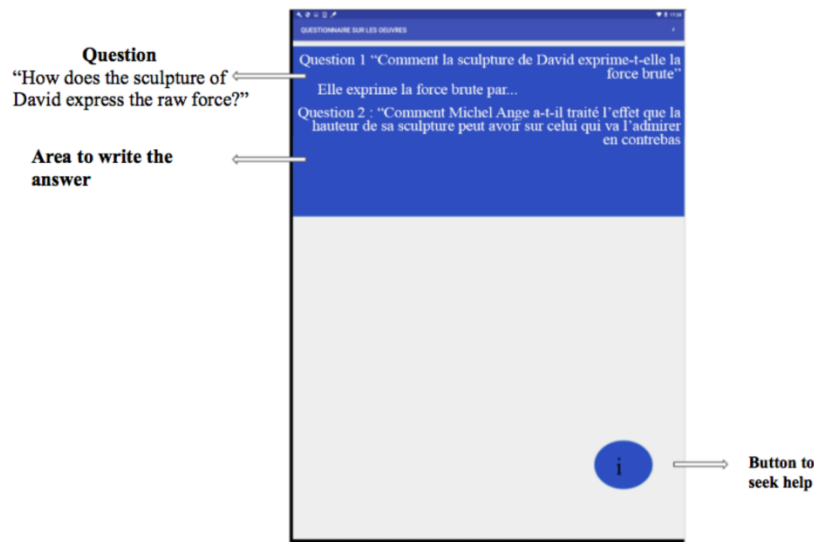

Figure 5.1. *Screenshot of the page to answer questions and request help. For a color version of the figure, see www.iste.co.uk/pelissier/education.zip*

If participants wished, they could request help by seeking for additional information about a specific area of the work (face, arms, feet, etc.) to the experimenter, which could help them to respond (Figure 5.2). Each question had the answer in an area of the work. Consequently, by seeking help, individuals were able to construct an answer. These were the conditions of help-seeking that differ between the public and private contexts.
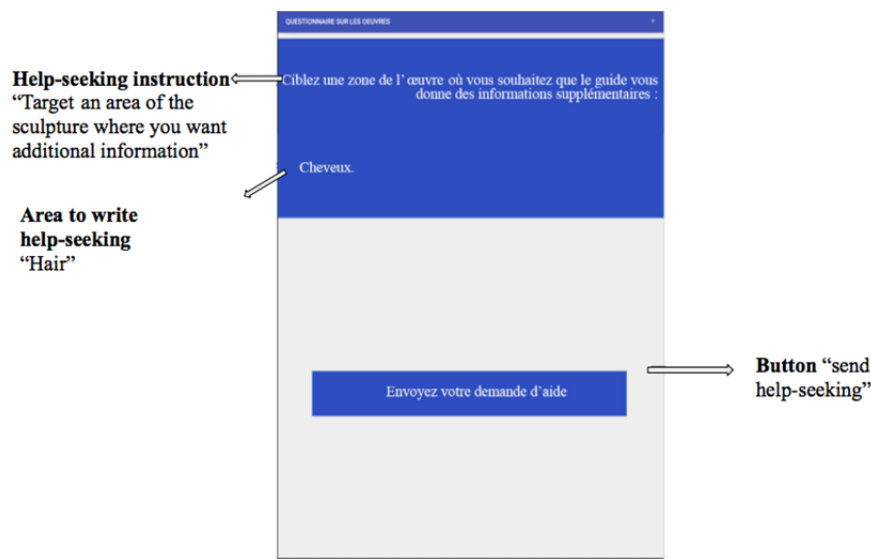
Figure 5.2. *Screenshot of the page where you can request help. For a color version of the figure, see www.iste.co.uk/pelissier/education.zip*

At the end of the presentation of the works and the completion of the questions, students were invited to return to the questionnaire related to our variable. After confirming that they had completed the visit, they had to complete the questionnaires on threat perception and performance goals associated with help-seeking, placed at the end of the experiment to avoid suggesting the goals of our study and thus risk directing and biasing the participants' behaviors. The total duration of the experiment was 90 minutes on average.

To summarize the different stages of the experiment:

– presentation of the process and instructions, followed by a familiarization phase;

– completion of socio-demographic questionnaires and prior knowledge;

– experimental museum visit: for each work of art, a three minute presentation of the work and a seven minute period to answer questions and request help;

– after the visit: responses to questionnaires evaluating achievement goals and perceptions of the act of requesting help.

5.4. Results

5.4.1. *Descriptive statistics*

After verifying the level of previous knowledge, we will present descriptive statistics on achievement goals, threat perceptions and contexts, including reliability analyses. The normality of the distributions and the homogeneity of the variances have been verified. In the case of extreme values, some participants were removed from the statistical analyses. Table 5.2 shows that the level of previous knowledge of Italian Renaissance art is very low for all participants. The result of the independent t-test shows that the level of prior knowledge of participants from both context groups is equivalent, $t(39) = 1.75$; $p = 0.11$; $d = 0.27$. This result reflects the need for help to succeed in the task.

Regarding achievement goals, the results (Table 5.3) show that participants pursue more performance goals and, more particularly, avoidance goals. In addition, learners seem more sensitive to perceptions of threats to their competence than to the need for autonomy.

	Public context (PU) M (SD)	Private context (PRI)M (SD)	All contexts M (SD)
Previous knowledge level (min. 0, max. 1)	0.04 (0.08)	0.01 (0.03)	0.02 (0.13)

Table 5.2. *Means and standard deviations of the level of previous knowledge in Italian Renaissance art*

All Cronbach alpha coefficients being greater than 0.60, they showed good reliability and inter-item and intra-dimensional consistency of the measurement scales. It should be reminded that the general objective of this study was to compare the effect of achievement goals and the effect of the private versus public context on the perception of the threat and on the act of requesting help. The statistical analyses performed are presented below.

	M	SD	Cronbach alpha
MG (min. 0; max. 10)	3.47	1.71	0.65
PAvG (min. 0; max. 10)	3.76	3,27	0.93
PAvG (min. 0; max. 10)	7.53	2.95	0.83
Perception of threat to competence (min. 0; max. 10)	4.24	1.99	0.71
Perception of threat to autonomy (min. 0; max. 10)	4.84	1.80	0.61

Table 5.3. *Means, standard deviations and Cronbach's coefficient in relation to the achievement goals and threat perceptions in requesting help*

5.4.2. Inferential statistics

5.4.2.1. Effect of context on help-seeking

The results showed that the number mean of help-seeking in a private context ($M = 1.54$; $SD = 1.15$) is significantly higher than that obtained in a public context ($M = 0.75$; $SD = 0.64$), $t(39) = 2.68$; $p = 0.01$. This is in line with our hypothesis.

5.4.2.2. Effect of context on threat perception

The hypothesis of a difference in threat perception according to the context was assessed via a student test with independent measures, revealing a significant difference that is in line with our hypotheses. Learners perceive help-seeking as more threatening to their competence in a public context ($M = 4.93$; $SD = 2.46$) than in a private context ($M = 3.59$; $SD = 1.14$), $t(39) = 2.27$; $p = 0.03$. The same was applied to the perception of the threat to autonomy, which was higher in a public context ($M = 5.4$; $SD = 2.03$) than in private ($M = 4.31$; $SD = 1.42$), $t(39) = 2.00$; $p = 0.05$.

5.4.2.3. Perception of threat and help-seeking depending on the context

The Bravais–Pearson correlation test highlighted in Table 5.4 revealed that there were no significant relationships between the perceived threat associated with help-seeking and help-seeking in the context. This was in line with our assumptions.

	PU help-seeking	PRI help-seeking	Help-seeking in all contexts
Threat to competence	0.014 (p = 0.95)	0.13 (p = 0.59)	− 0.088 (p = 0.58)
Threat to autonomy	0.35 (p = 0.13)	0.38 (p = 0.09)	− 0.166 (p = 0.30)

Table 5.4. *Correlations (and p-values) between perceptions of threat in requesting help and help-seeking according to the context*

5.4.2.4. *Relationship between achievement goals and help-seeking according to context*

Table 5.5 reveals significant relationships between achievement goals and help-seeking in all contexts: the more the participant pursues a goal of mastery or performance, the less he or she asks for help. Conversely, the more the participant pursues a performance-avoidance goal, the more he or she asked for help. This was contrary to our hypothesis. Table 5.5 also shows relationships between achievement goals and help-seeking depending on the context, contradicting our hypothesis. In a private context, no relationship was revealed between the goals of mastery, performance approach and the act of help-seeking, and we had not made any hypothesis on this subject. However, a relationship was found between performance-avoidance goals and help-seeking: the more participants pursued performance-avoidance goals, the more they sought help. Finally, in a public context, significant relationships were found: the more participants pursued mastery goals and performance goals, the less they sought help. No relationship was found between performance-avoidance goals and help-seeking in a public context, which was consistent with our expectations.

	Request for help in a public context	Request for help in a private context	Help applications in all contexts
MG	− 0.50 (p = 0.02)	− 0.31 (p = 0.16)	− 0.47 (p = 0.002)
PAvG	− 0.66 (p = 0.001)	− 0.51 (p = 0.017)	− 0.56 (p < 0.001)
PAvG	37 (p = 0.10)	0.56 (p = 0.008)	0.41 (p = 0.007)

Table 5.5. *Bravais–Pearson correlations between achievement goals and help-seeking*

5.4.2.5. *Relationship between achievement goals and the perception of threat of help-seeking according to the context*

We can observe in Table 5.6 that in a private context, a correlation was found between performance-avoidance goals and the perception of a threat to autonomy. In private conditions, the more individuals pursued performance-avoidance goals, the more they perceived help-seeking as a threat to their need for autonomy. No other relationship between the goals and the perception of the threat to competence in private conditions was found, in line with our hypotheses. Finally, no relationship was found between the perception of a threat to competence in a public context and the mastery and avoidance goals. However, a relationship had been found regarding performance goals: the more individuals pursue this goal, the more they perceived help-seeking as threatening the need for autonomy in a public context.

	PU threat to competence	**PU threat to autonomy**	**PRI threat to competence**	**PRI threat to autonomy**
MG	0.37 (p = 0.11)	− 0.13 (p = 0.59)	0.33 (p = 0.13)	0.27 (p = 0.24)
PAvG	0.11 (p = 0.65)	− 0.42 (p = 0.06)	0.27 (p = 0.23)	− 0.11 (p = 0.64)
PAvG	− 0.60 (p = 0.80)	0.62 (p = 0.003)	− 0.17 (p = 0.45)	0.45 (p = 0.04)

Table 5.6. *Correlation (and p-values) between achievement goals and the perception of threat of help-seeking according to the context*

5.4.2.6. *Effect of help-seeking on performance*

The use of help-seeking was supposed to improve the performance of individuals. To test this, a Bravais–Pearson correlation test was used. It highlighted the existence of a significant relationship, $r = 0.62$; $p < 0.001$. The result of the linear regression analysis showed that help-seeking had a significant effect on performance $F(1.39) = 24.75$; $p < 0.001$. A high number of help-seeking predicted high performance. Table 5.7 presents the main results obtained.

	PU help-seeking (H.S)	PRI H.S	PU threat to competence (C)	PU threat to autonomy (A)	PU threat to C	PRI Threat to A
MG	–	NS	NS	NS	NS	NS
PAvG	–	–	NS	NS	NS	NS
PAvG	NS	+	NS	+	NS	+
Threat to C	NS	NS				
Threat to A	NS	NS				

- negative relationship; + = positive relationship; NS = not significant

Table 5.7. *Main results*

5.5. Discussion

The objective of this study was to examine the impact of the context of help-seeking on motivational variables and the actual behavior of help-seeking. The main hypothesis defended was that a private context promoted the actual act of help-seeking, without being impacted by achievement goals and perception of threat.

5.5.1. *Effect of context on the act of requesting help*

In line with our hypothesis, learners in private context did more help-seeking than in public context. This result was in line with the literature. As Keefer and Karabenik (1998) pointed out, the digital environment reduced the costs associated with requesting help, in particular by ensuring relative anonymity. Aleven *et al.* (2003) also found that public situations, with peer or teacher relationships, had a higher emotional cost than in a digital learning environment, reducing the number of help-seeking.

5.5.2. *Effect of context on threat perception*

In accordance with our hypothesis, participants in a public context perceived more threat to competence and to the need for autonomy than those in a private

context. This was in line with the literature. In a private context during a learning situation in computer environments for human learning, authors such as Keefer and Karabenick in 1998 or Kitsantas and Chow in 2007 demonstrated that seeking help was less costly. This would be due to the fact that the situation was perceived as less threatening than a face-to-face situation.

5.5.3. *Relationship between threat perception and help-seeking according to the context*

We did not find any significant relationship between perceptions and help-seeking in relation to the context. Indeed, while the literature placed the perception of threat as a mediating variable in terms of the intent of help-seeking (Ryan and Pintrich 1997; Karabenick 2013; Mulet 2016), there was a lack of studies that examined the actual use of this help-seeking. In addition, the authors who worked on the actual use of help-seeking (Huet *et al.* 2011, 2016) did not reveal any relationship. It would therefore be interesting to carry out further studies to have a better understanding on the nature of the threat perception variable.

5.5.4. *Relationship between achievement goals and help-seeking according to the context*

We assumed that whatever the context, achievement goals would not impact the learners' requests for effective help. However, in all contexts, we found significant relationships between achievement goals and help-seeking.

An explanation can be found in the impact of the cognitive cost of the task. Indeed, some studies have shown that, when individuals have low knowledge in a field, it requires more effort to solve a task. However, all our participants had a very low level of prior knowledge, leading to high cognitive costs (Sweller 2001), making self-regulation processes and help-seeking difficult (Van Gog *et al.* 2008).

However, these unexpected results can also be discussed from a methodological point of view. Indeed, the duration of the experiment was relatively long, 90 minutes on average, and the achievement goal questionnaire was placed at the end of the experiment so that they could be contextualized to the task. However, in the literature, achievement goals are generally not contextualized to the task performed and are fulfilled before the task is completed. Then, we can ask ourselves if their cognitive resources and attention resources were sufficient to respond effectively and smoothly to the achievement goal questionnaire. These results suggest the need for more research on temporality, contextualization and the conditions under which this type of questionnaire can be presented.

5.5.5. *Effect of help-seeking on performance*

Finally, we assumed from the literature that the demand for appropriate help had a positive effect on learning performance (Nelson-Le-Gall 1981). According to our results, the help-seeking has indeed improved performance and thus promoted learning, which is in line with both our assumptions and the literature.

5.6. Conclusion

At a time when digital learning is multiplying through different media, the support and notion of helping learners is a field of research that needs to be further developed. Indeed, if our main results are in line with our hypotheses, our results concerning achievement goals were not in agreement with the majority of the results in the literature, further demonstrating the purpose of exploring this issue. In view of the results, a scientific contribution can be made by expanding the literature, as well as by applying it and making recommendations in education: promote the anonymity of help-seeking in order to remove perceptions of the threat and to improve the quality of learning.

Nevertheless, future prospects are envisaged in order to have a better understanding of the results obtained and in particular the low rate of help-seeking. Help-seeking would likely have been higher with a sample of art students. Indeed, the tasks of listening to the presentation of the work and answering questions would have presented greater challenges and benefits for art students than for our sample. A future perspective would be to repeat this experiment with art students and use works from their curriculum for the tasks requested. Another factor to consider in future experiments would be to reduce the amount of information presented and retained during the visit in order to limit cognitive overload (Sweller 2001). Finally, with a view to expanding our study, we could evaluate the impact of the way in which works are presented on the actual act of requesting help, via new virtual or augmented reality technologies.

5.7. References

Aleven, V., Stahl, E., Schworm, S., *et al.* (2003). Help seeking and help design in interactive learning environments. *Review of Educational Research*, 73(3), 277–320.

Ames, C. (1992). Classrooms: Goals, structures, and student motivation. *Journal of Educational Psychology*, 84(3), 261–271.

Bartholome, T., Stahl, E., Pieschl, S., Bromme, R. (2006). What matters in help-seeking? A study of help effectiveness and learner-related factors. *Computers in Human Behavior*, 22(1), 113–129.

Butler, R. (1998). Determinants of help seeking: Relations between perceived reasons for classroom help-avoidance and help-seeking behaviors in an experimental context. *Journal of Educational Psychology*, 90(4), 630–643.

Butler, R., Newman, O. (1995). Effects of task and ego achievement goals on help-seeking behaviors and attitudes. *Journal of Educational Psychology*, 87(2), 261–271.

Cheong, Y.F., Pajares, F., Oberman, P.S. (2004). Motivation and academic help-seeking in high school computer science. *Computer Science Education,* 14(1), 3–19.

Clarebout, G., Elen, J. (2009). The complexity of tool use in computer-based learning environments. *Instructional Science*, 37(5), 475–486.

Collazo, N.J., Elen, J., Clarebout, G. (2012). To use or not to use tools in interactive learning environments: a question of self-efficacy? *The Literacy Information and Computer Education Journal*, 1(1), 810–817.

Darnon, B., Butera, F. (2005). Buts d'accomplissement, stratégies d'étude, et motivation intrinsèque: présentation d'un domaine de recherche et validation française de l'échelle d'Elliot et McGregor. *L'année psychologique*, 105(1), 105–131.

Di Serio, Á., Ibáñez, M.B., Kloos, C.D. (2013). Impact of an augmented reality system on students' motivation for a visual art course. *Computers & Education*, 68, 586–596.

Dweck, C.S., Leggett, E.L. (1988). A social-cognitive approach to motivation and personality. *Psychological Review*, 95(2), 256–73.

Elliot, A.J., Murayama, K. (2008). On the measurement of achievement goals: Critique, illustration, and application. *Journal of Educational Psychology*, 100(3), 613–628.

Goldberg, A.K., Riemer, F.J. (2006). All aboard-destination unknown: A sociological discussion of online learning. *Journal of Educational Technology & Society*, 9(4), 166–172.

Huet, N., Escribe, C., Dupeyrat, C., Sakdavong, J.-C. (2011). The influence of achievement goals and perceptions of online help on its actual use in an interactive learning environment. *Computers in Human Behavior*, 27(1), 413–420.

Huet, N., Dupeyrat, C., Escribe, C. (2013). Help-seeking intentions and actual use of help in an interactive learning environment. In *Advances in Help Seeking Research and Applications: The Role of Emerging Technologies*, Karabenick, S.A., Puustinen, M. (eds). Information Age Publishing, Charlotte, 121–146.

Huet, N., Motàk, L., Sakdavong, J.C. (2016). Motivation to seek help and help efficiency in students who failed in an initial task. *Computers in Human Behavior*, 63, 584–593.

Karabenick, S.A. (1998). Help seeking as a strategic resource. *Strategic Help Seeking: Implications for Learning and Teaching*, 1–11.

Karabenick, S.A. (2003). Seeking help in large college classes: A person-centered approach. *Contemporary Educational Psychology*, 28(1), 37–58.

Karabenick, S.A., Dembo, M.H. (2011). Understanding and facilitating self-regulated help seeking. *New Directions for Teaching and Learning*, 126, 33–43.

Karabenick, S.A., Knapp, J.R. (1988). Effects of computer privacy on helpseeking. *Journal of Applied Social Psychology*, 18, 461–472.

Keefer, J.A., Karabenick, S.A. (1998). Help seeking in the information age. *Strategic Help Seeking: Implications for Learning and Teaching*, 219–250.

Kitsantas, A., Chow, A. (2007). College students' perceived threat and preference for seeking help in traditional, distributed, and distance learning environments. *Computers & Education*, 48(3), 383–395.

Lee, F. (2002). The social costs of seeking help. *Journal of Applied Behavioral Science*, 38, 17–35.

Mahasneh, R.A., Sowan, A.K., Nassar, Y.H. (2012). Academic help-seeking in online and face-to-face learning environment. *E-Learning and Digital Media*, 9(2), 196–210.

Martinez-Miron, E., Harris, A., du Boulay, B., *et al.* (2005). The role of learning goals in the design of ILEs: Some issues to consider. In *Artificial Intelligence in Education*, Looi, C.-K., McCalla, G., Bredeweg, B., Breuker, J. (eds). IOS Press, Amsterdam, 427–434.

Mulet, J. (2016). Facteurs cognitifs, métacognitifs et motivationnels de la recherche d'aides à l'apprentissage en environnement informatisé. PhD thesis, Université Toulouse II Jean Jaurès, Toulouse.

Nelson-Le Gall, S. (1981). Help-seeking: An understudied problem-solving skill in children. *Developmental Review*, 1(3), 224–246.

Nelson-Le Gall, S. (1985). Help-seeking behavior in learning. *Review of Research in Education*, 12, 55–90.

Newman, R.S. (1990). Children's help-seeking in the classroom: The role of motivational factors and attitudes. *Journal of Educational Psychology*, 82(1), 71.

Noury, F., Huet, N., Escribe, C., *et al.* (2007). Buts d'accomplissement de soi et jugement métacognitif des aides en EIAH. *EIAH 2007*, 293–298.

Pajares, F., Cheong, Y.F., Oberman, P. (2004). Psychometric analysis of computer science help-seeking scales. *Educational and Psychological Measurement*, 64(3), 496–513.

Pintrich, P. (2000). The role of goal orientation in self-regulated learning. In *Handbook of self-regulation*, Boekaerts, M., Pintrich, P.R., Zeidner, M. (eds). Academic Press, San Diego, 451–502.

Puustinen, M. (1998). Help-seeking behavior in a problem-solving situation: Development of self-regulation. *European Journal of Psychology of Education*, 13(2), 271–282.

Puustinen, M. (2010). La demande d'aide chez l'élève : avancées conceptuelles, méthodologiques et nouvelles données. Summary document, HDR, Université de Poitiers, Poitiers.

Puustinen, M., Lyyra, A., Metsälpeto, R.L., Pulkkinen, L. (2008). Children's help seeking: The role of parenting. *Learning and Instruction*, 18, 160–171.

Renkl, A. (2002). Worked-out examples: instructional explanations support learning by self explanations. *Learning and Instruction*, 12(5), 529–556.

Ryan, A.M., Pintrich, P.R. (1997). Should I ask for help? The role of motivation and attitudes in adolescents' help seeking in math class. *Journal of Educational Psychology*, 89(2), 329–341.

Schwonke, R. (2015). Metacognitive load – useful, or extraneous concept? Metacognitive and self-regulatory demands in computer-based learning. *Educational Technology & Society*, 18(4), 172–184.

Schwonke, R., Ertelt, A., Otieno, C., *et al.* (2013). Metacognitive support promotes an effective use of instructional resources in intelligent tutoring. *Learning and Instruction*, 23, 136–150.

Schworm, S., Gruber, H. (2012). E-learning in universities: Supporting help-seeking processes by instructional prompts. *British Journal of Educational Technology*, 43(2), 272–281.

Sweller, J. (1988). Cognitive load during problem solving: Effects on learning. *Cognitive Science*, 12(2), 257–285.

Tanaka, A., Murakami, Y., Okuno, T., Yamauchi, H. (2002). Achievement goals, attitudes toward help seeking, and help-seeking behavior in the classroom. *Learning and Individual Differences*, 13(1), 23–35.

Van Gog, T., Kester, L., Paas, F. (2011). Effects of concurrent monitoring on cognitive load and performance as a function of task complexity. *Applied Cognitive Psychology*, 25(4), 584–587.

Wood, H., Wood, D. (1999). Help seeking, learning and contingent tutoring. *Computers & Education*, 33(2), 153–169.

PART 3

Tools to Support the Transformation
of Teaching Practices

The Postural Dynamics of the Teacher: A Tool Assisting the Analysis of University Practices

6.1. Introduction

The arrival of a technology in a professional setting generally creates tension. For practitioners in any field, it often means implementing changes to how they exercise their profession, and how they characterize, coordinate and analyze their actions as well as how they adjust them to the situational constraints they encounter. These changes can also instigate a posture and offer actors an opportunity to question the possible evolution of their own practices, the issues associated with their interventions and/or the (human and technical) means that can be implemented to achieve the objectives they set themselves.

Teachers are no exception to this rule. With the arrival of digital technology in political discourse where innovative practices are supported by institutions, the question of the teacher's posture arises. This can be defined as representing the articulation of ways of seeing oneself and positioning oneself as an actor. It helps one to understand the changes that are taking place in the professional development of one's profession, integrating increasingly complex training systems, because it combines a technical and pedagogical component (Charlier *et al.* 2006). In particular, in the context of higher education, we are witnessing a political desire to (re)develop university teaching practices. Hybrid and distance learning, as well as MOOC/SPOC tools, raise questions related to the role of the teacher: Is he/she supporting and coordinating digital resources, or even tutoring a student, who is increasingly at the center of a teaching system, offering the possibility of carrying

Chapter written by Stephen Lédé and Chrysta Pélissier.

out flexible and personalized courses in the same way as those promoted by the law on student orientation and success[1]? This recent law advocates for the personalization of training paths as a means of bolstering student success while adapting to the new audiences integrating into French universities. These changes involve the construction of new technological, but primarily methodological, tools, making it possible to question the new roles of teachers that have not yet been sufficiently explored in order to encourage their self-evaluation, which is part of a continuous professionalization process intended to meet the challenges of today's and tomorrow's universities.

The challenge is all the greater and more complex as new concerns emerge for teachers, such as training students to have autonomy (Nissen 2007). Formerly considered a prerequisite, this ability is now becoming essential for academic success and quality professional integration. Indeed, a society simultaneously based on science, knowledge and information (Breton 2005) favors self-education, which profoundly reinterprets the role and place of the university, leading to a consideration of the individual's knowledge independent from its origin (but with validation of the source) while taking into account the specificities of self-learning. However, autonomy is a skill (Perrenoud 1995) that is constantly challenged and never totally acquired (Porcher 1989), which tests the concept of assistance more than ever. Indeed, it plays a fundamental role in the learning of training skills. It is the result of both a strategy and a process (Pélissier 2014) gathered under the macro idea of support (Bucheton 2008) which adds to the atmosphere as well as to guidance and interconnection concepts so that they converge towards the central macro concept of didactic and notional knowledge (Bucheton 2001).

To gradually implement this process among students, we postulate that a progressively less-guided approach, based on increasingly abstract and peer-oriented modalities (Lédé and Pélissier 2018), can be an asset to the development of personal autonomy. Such a system leads the teacher to strategically implement several postures (Bucheton and Soulé 2009). This chapter therefore aims to propose a methodological tool enabling teachers to question their posture in training systems whose objective is (in particular) to promote the development of student autonomy.

In the rest of the chapter, we will first present the theoretical framework of the concept of the teacher's posture, which, although *à la mode*, has been scarcely studied in depth due to the complexity of the instrumentation required to understand it. Next, based on the theoretical model of the teacher's action (Bucheton 2008), we will propose a representation of the phenomenon of the dynamics of the posture that the teacher sets up or can set up using the same device. Lastly, this phenomenon will be illustrated by a project carried out at the Institut universitaire de technologie de

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1 https://www.legifrance.gouv.fr/eli/loi/2018/3/8/ESRX1730554L/jo/texte.

Béziers (Béziers University of Technology, IUT), where students enrolled in a university technology degree follow a module called "Writing for digital media" for four semesters.

6.2. Understanding change in a tense context: the fundamental role of the teacher's posture

In this context of tensions mentioned above, the role of the university appears to be essential in the face of the enormous volume of fake news of which the devastating effects regularly make the front page. If the question of practices is now widely addressed in research, the same cannot be said for postures that remain scarcely studied in depth (Deschryver and Lameul 2016), even though we believe that they constitute a key element in understanding how changes are imposed on and by teachers (Charlier *et al*. 2006).

The dematerialization of the world and its relationships due to the increasingly systematic use of ICT[2] requires refocusing on a profoundly human dimension. This is all the more true considering training is increasingly distant and transfers to the learner – too often left to his or her own devices – the spatio-temporal variables previously handled by and within the institution. The development of tutoring, seen as an essential component of a distance learning system (Depover *et al*. 2011), contributes to this dynamic of refocusing on the human dimension, of which the body and the activity are essential and dynamic aspects. From this perspective, the posture lies between the interiority and exteriority of the subject. It makes it possible to translate the dynamics at work, which are expressed in the form of the actions expected in a training situation and which can be transferred during training. However, there are still too few studies available on the postures of the teacher. This may be due to the relative difficulty of defining the concept in a pedagogical context and of carrying out the practices in order to understand their intimate and dynamic dimensions.

6.2.1. *Posture: an intuitive hyperonym*

Posture has been a buzzword for a while but has not been studied in very much depth in current research (Deschryver and Lameul 2016). This word appears at first sight to be intuitive, in the sense that it is frequently used about common and shared realities. As a result, it is easy to speak of the "author's posture", a "critical posture" or even the "student's posture" without it being possible to give strict definitions to these terms. According to the CNRTL[3], posture is a concept borrowed from the Italian

2 Information and communication technologies.

3 http://www.cnrtl.fr/definition/posture.

postura which refers to the position or attitude. This profoundly corporal value is already present in the Latin term positura (which means "position" or "disposition") from which it is derived as well as in the current definition of the term: an "attitude, position of the body, voluntary or not, which can be noticed either by what is unusual or unnatural, particular to a person or group, or by the willingness to express it insistently". In addition to this definition in the literal sense, there is a figurative meaning that has the value of a moral attitude: In 1927, Julien Benda denounced in *The Treason of the Intellectuals* (reprinted in 2006) the "political posture" of the literary people, which refers to someone's social, political and economic condition.

Although the physical dimension seems inexorably linked to the concept of posture, its relative complexity comes from the fact that it functions as a hyperonym covering realities that seem obvious but are difficult to define strictly (Saint-Amand and Vrydaghs 2011). As a result, the word posture constitutes what could be called a label word or category in pedagogical terminology. This makes it easier to define the subcategories than the category itself. To make a comparison, if we take the example of the category of insects, the definition (or representation) of an ant or a bee will be relatively easy for everyone; this is not the case for the insect category itself, which is much broader and includes species with varied behaviors and characteristics. In this way, the term posture is similar to that of insect in terms of the relative difficulty of defining it.

However, Lameul gives a noteworthy definition of the notion of posture. She defines it as follows:

> [a] (physical or symbolic) manifestation of a mental state. Shaped by our beliefs and directed by our intentions, it exerts a guiding and dynamic influence on our actions, giving them meaning and justification. (Lameul 2008)

Through this definition, we perceive both the highly dynamic aspect of posture at the interface of various representations and its orientation towards action. This definition also makes it possible to explain the significant difference between individuals because of its truly intimate dimension. The posture is therefore largely shaped by our personal histories, our previous experiences or even the habits we have built, consciously or unconsciously. If we take the case of a teacher, it means that his or her posture depends on his or her personal history, school history, professional routines, beliefs and intentions. This is a relatively complex equation for solving a phenomenon that is difficult to observe in its entirety. The weight of personal history is confirmed by the work of Albero *et al.* (2009) who studied innovative university teachers through the journeys of four pioneers, drawing on their biographical memories as well as their significant past experiences.

The definition proposed by Lameul (2008) also includes posture in a dynamic approach as it is located at the three-dimensional interface of belief (which covers what the teacher believes regarding teaching), intention (which covers what the teacher plans to do) and action. This dynamic approach is consistent with the definition proposed by Bucheton and Soulé (2009). These authors draw inspiration in their work from French didactics (Bucheton and Bautier 1997) and translate Vergnaud's theory of concepts into action (1996). According to Bucheton and Soulé, posture can be defined as a:

> pre-constructed scheme of "thinking-saying-doing", on which the subject calls in response to a given school situation or task. The posture is relative to the task but is constructed on the basis of the subject's social, personal and academic history. (Bucheton and Soulé 2009)

Even if the two definitions appear very similar, Bucheton and Soulé (2009) present a range of postures that the subject can use to solve a task. They put forward the hypothesis of identifying and characterizing the postures that a teacher can successively adopt. However, the posture is both on the side of the subject and on the side of the object and the situation, so it may seem difficult, but not impossible, to propose instruments capable of identifying it and characterizing its postures.

Among the existing instruments are two reference tools in the form of questionnaires: the Teaching Perspectives Inventory (TPI) and the Approaches to Teaching Inventory (ATI). These tools allow for a quantitative approach, but they have limitations.

6.2.2. *A qualitative approach focused on the teacher's postures*

The concept of posture is a complex one that is difficult to account for using instruments, even when they have been specially constructed for this purpose. In a 2016 article, Deschryver and Lameul compare two reference instruments in this area: the Teaching Perspectives Inventory (TPI), based on the components of the teaching approach, and the Approaches to Teaching Inventory (ATI), based on the whole approach.

The TPI is an instrument promoted by Pratt and Associates in 1998. It is part of an analytical model postulating that each teacher is a carrier of postural tendencies that he or she will develop according to his or her personal experiences, as well as in accordance with the teaching context of which he or she is part, while refusing the slightest hierarchy between postures. The term "perspectives" is in line with the idea of dynamic posture and the triptych belief–intention–action triptych stated above. The main focus of the TPI is therefore on concepts of learning and teaching. It is

presented in the form of a questionnaire of 45 items on which teachers must position themselves according to their degree of agreement with regard to a statement. In order to qualify the remarks, five degrees of agreement are proposed, from strongly agreeing to strongly disagreeing.

The ATI was designed by Prosser and Trigwell in 1999 with a different analysis model. It focuses on the broader framework of teaching approaches while the TPI refers to conceptions. As a result, if the TPI is intended to make an inventory of the postures mobilized by the teacher in a given situation, the ATI focuses on the approach. It is therefore broader and more analytical as it groups together the teacher's perception of the situation, as well as the quality that he or she estimates the results of his or her teaching to have. From the point of view of form, the ATI does not address the belief dimension present in the TPI nor its belief–intention–action triptych. It is presented in the form of 16 items for which the teacher indicates whether for him or her the statement is always true or rarely true.

The ATI and TPI are essentially quantitative tools. They do not allow us to enter into the postural complexity defined by Lameul (2008) or Bucheton (2009). Although Deschryver and Lameul (2016) chose ATI to identify the postures at work in university teaching, these authors completed their study with a series of interviews in order to identify the intimate dimension of posture. Despite this arrangement, the authors still speak of "methodological trial and error", while indicating that neither tool allows a complete understanding of a given posture in its entirety (Lameul 2008). Given the limitations of these tools and the relative labeling they use, we choose to rely on the work of Bucheton and Soulé (2009). They focus on the posture used by the teacher on scaffolding and propose a set of limiting postures that the teacher varies successively within a pedagogical situation. With this premise in mind, we can consider the existence of a strategy in the choice of postures implemented by each teacher according to the objectives pursued, which is not comprehensible in the ATI and the TPI.

This vision implies that professional gestures are considered the external manifestation of a posture that ensures the link between interiority and exteriority. It also attempts to clarify the multi-agenda model on which this approach is based; in the continuity of the work of ERTE 40 carried out between 2004 and 2007, Bucheton and Soulé used this model to propose a matrix of all teaching activities organized around five invariants, called macro-occupations, which constitute the basis for professional gestures. *Trésor de la Langue Française informatisé* defines gesture[4] as an action that can be perceived and interpreted by a third party. It is therefore through external observation that these codes, linked to a purely academic context, can be identified as gestures. The five macro concerns proposed are the

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4 http://www.cnrtl.fr/definition/geste.

substrate of professional gestures and the pillars of classroom action. They are invariables that apply to any pedagogical act in a relationship that is at once systemic (because they interact with each other), modular (because they are linked to a teaching unit), hierarchical (because they do not all have the same value) and dynamic (because their organization evolves according to the progress of a teaching sequence). Here, we find the notion of dynamism, which is in complete correlation with the posture as we have described it previously and as we envisage it.

In their article, Bucheton and Soulé identify guidance, atmosphere, interconnection, support and knowledge as the five macro concerns of the teacher. Guidance includes everything that allows the teacher to organize a coherent session according to the different constraints imposed. This macro concern covers both time management and the use of traditional artifacts, such as a lesson plan or an agenda (numerical or not) within a fixed time constraint (since the lesson is time-limited). In this fixed and constrained framework, the teacher is in a permanent dilemma in the sense that he or she must make choices about the knowledge to be integrated, as well as the pedagogical modalities, in a limited time. Atmosphere refers to everything that the teacher does to engage students in a task. It enables exchanges between actors and gives a tone that can be varied (e.g. relaxed, serious), depending on gestures such as listening, making jokes or reprimands. Interconnection makes it possible to relate certain components of the didactic situation to each other, whether between environments inside and outside the classroom, between all the tasks performed by the learner in the different subjects taught or between the beginning and the end of the same learning session. Interconnection makes it possible to restore all students to an equal footing by recontextualizing knowledge. Knowledge is the fourth macro concern. It is the teacher's intended target to which all other macro concerns converge. This is a vague element whose identification makes it possible to determine the nature of the support that the teacher provides. Finally, support is a concept borrowed from Bruner to refer to all forms of assistance provided by the teacher to students. It is defined as a "crutch" and must therefore be temporary. It is to this macro concern that the support postures described by Bucheton and Soulé are related.

In their article, Bucheton and Soulé (2009) identify a coadjustment of the teacher's action with that of the students through the study postures used by the students and the support postures used by the teacher. This means that, within the same situation, the teacher adjusts his or her posture in response to the students' postures, which adjust themselves to the teacher's postures. While it seems difficult to know which posture is at the origin of this coadjustment – like the well-known problem of the chicken and the egg – a close correlation is found by the two authors between belonging to a privileged environment and the diversity of postures that can be used by students in a teaching situation. Nevertheless, the study postures of students and the support postures of teachers are similar insofar as they are both

relatively limited, since six postures are identified in students and teachers alike, reflecting a set range of choices that can be used during the same situation.

However, the system underpinning the representation of the phenomenon we propose includes a significant proportion of digital and distance learning. We postulate that an increasingly distant, increasingly less guided and increasingly more peer-oriented education would promote the development of autonomy (Lédé and Pélissier 2018). In this context, it seems very difficult to speak of a reciprocal adjustment of postures since a spatio-temporal shift occurs with each interaction and this adjustment dynamic cannot be formally observed (too many interactive parameters according to the digital technologies used). As a result, we choose not to address the student's postures in order to focus on those implemented by the teacher in the construction of a system whose objective is to promote the development of student autonomy. The representation of the phenomenon that we present below is intended to illustrate the dynamics between the teacher's support postures (based on the Bucheton and Soulé model) in a process of strengthening student autonomy.

6.3. The phenomenon of postural dynamics in promoting the development of autonomy

The support postures on which our representation is based are directly related to the concept of assistance as they make it possible to vary the support provided by the teacher to students according to their learning objective. Although identified by Bucheton and Soulé, the six possible postures are not defined as static or exclusive states as the teacher can use one or more postures within the same situation, provided that there is a correlation with the teacher's experience. As a result, trainee teachers have great difficulty in abandoning the most control-oriented postures, while the variation of postures is the prerogative of experienced teachers, some of whom implement a real strategy. If we consider the strategy as a "set of coordinated actions, skillful operations, maneuvers to achieve a precise goal[5]" in our context, the goal is to develop students' autonomy while the actions concern the evolution (and number) of the postures involved. The representation we propose is therefore intended to explain the evolution of postures that are useful for achieving an objective of developing autonomy. It is therefore a methodological tool that allows the teacher to vary the proposed assistance.

After presenting the six support postures and their characterization elements, we will explain the dynamics that take place between them during a process of developing student autonomy.

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5 http://www.cnrtl.fr/definition/strat%C3%A9gie.

6.3.1. *Six support postures*

The proposed representation is based on the six support postures identified by Bucheton and Soulé (2009): the postures of control, counter-support, support, teaching and letting go, and the so-called "magician" posture. They constitute a range of possibilities for teachers and are translated into professional actions composed of many observable and identifiable elements, which can be linked to the macro concerns already mentioned, such as guidance, atmosphere, interconnection, objects of knowledge or the tasks entrusted to students.

The control posture is the posture most used by inexperienced teachers. It is demonstrated by a strong framework of the learning situation, which translates into several observable elements: the activities usually take place with all the students (at the level of the class group) who progress synchronously (all at the same time according to the instructions given by the teacher). The teacher is omnipotent during the session, like a guard or a monitor. He or she tries to respond to all of the students' requests while mastering them as much as possible. As a result, students are essentially in the action and in the "doing". The atmosphere is consequently hierarchical and even tense because the different moments of the session are punctuated by the teacher who organizes the transition from one stage to another. Interconnection gestures are therefore relatively rare, and knowledge objects are essentially marked by deeds. By its nature, the control posture is the one most closely linked to institutional obligations such as the presence or number of uses required to validate a teaching unit. The proposed assistance consists primarily of reminders of the elapsed and/or remaining time or of the method proposed by the teacher to take charge of certain parts of the process of completing the task.

The counter-support posture is derived from the control posture. It is demonstrated by the teacher taking charge of certain tasks proposed to the student at levels that can be more or less developed. At its peak, this posture can be manifested by a teacher who performs a task in the student's place. Like the control posture, guidance is essentially oriented towards the class group, which advances in a synchronic way. Individual contact with a student is often only intended to allow him or her to catch up with the class group in the event that he or she is behind the plan envisaged by the teacher who is still acting as a monitor. As a result, interconnection gestures remain relatively weak and it is essentially through actions that knowledge must be acquired, since the "doing" dominates the student's activities. This posture is expressed in particular when a session constitutes an opportunity to use a computer application unknown to students but whose appropriation is not the main objective. In this instance, the teacher may have to carry out certain ancillary tasks for the pupils in order to allow them to save time or to use their strengths on the subject knowledge associated with the task. The

assistance therefore consists primarily of taking charge of certain parts of the student's task.

The support posture appears to be very different from the two previous postures in that it involves dedicating time and letting the student work so that he or she can find the answers on his or her own as much as possible. This is reflected in both collective and individual assistance: it aims to provoke discussions between students in order to get them to confront their points of view. The teacher is therefore in the position of an observer more so than of a teacher and, as often as possible, must refrain from intervening in order to influence students as little as possible. As a result, guidance is both flexible and open, with a direct link to the atmosphere of collaboration and relaxation. The teacher thus multiplies the interconnection gestures towards the students so that they can be in a reflective or creative posture that favors the emergence of knowledge, or its devolution, as well as the reasoning process of the students. Indeed, students (like historians) must apply "criticism to demanding sources" (Descamps 2011), which has always been a fundamental part of university teaching beyond the subject of history alone. It is strengthened in the context of the information society (Compiègne 2011): where information about everything becomes central and accessible to everyone all the time. In this case, assistance takes the form of advice and questions formulated by the teacher for the learner in order to encourage him or her to position himself or herself in the face of different solutions, strategies and other important decisions related to his/her knowledge building process.

The teaching posture is essentially based on assistance in the synthesis and in the conceptualization that allows the student to formulate and verbalize the knowledge in question. Unlike control and counter-support postures, the teaching posture takes place over specific, targeted periods, such as at the end of a session. It takes the form of a synthesis and may be extended. From an external point of view, the teaching posture is demonstrated by a very strong use of metalanguage and a naming of knowledge as well as by evaluation gestures to make everyone involved aware of the progress made. Guidance occurs through the choice of an appropriate moment, key to the progress of the session. This implies a concentrated and attentive atmosphere (related to the relatively short duration of these moments). It is therefore logical that it is primarily with this posture that the teacher engages in many interconnection gestures that allow him or her to forge the link between the different tasks, along with past and future events. For the student, the teacher's help concerns what he or she cannot do alone (teacher's hypothesis), namely to take a step back from the task he or she is carrying out and the knowledge he or she has potentially built up. This is identified as part of a personal reflective approach by the students.

The letting-go posture is an extension and reinforcement of the support posture. It is about making students responsible for their work while allowing them to

experiment. Although the students' tasks are relatively variable, this posture is positively experienced by them as it is seen as a sign of trust. In this way, the teacher encourages the group to manage itself. In an atmosphere of trust, the teacher hands over the management of the session to all or a group of students and refuses to intervene (in particular at the level of decision-making). In this posture, interconnection gestures are at the initiative of the learners themselves. However, for this posture to be effective, it is necessary that the tasks given can actually be solved by the learners. If progress in the task is not perceived, the students can become discouraged. Assistance is then provided in the implementation of essentially instrumental or even organizational achievements.

Finally, the so-called "magician" posture is the most spectacular in terms of observable elements, insomuch as it mobilizes games, theatrical gestures, stories and engaging anecdotes in order to attract the learners' attention. This posture has a strong power of evocation as learners regularly indicate that they remember the anecdotes told by the teacher rather than the knowledge induced. Through this posture, knowledge must be guessed, built in a playful, relaxed atmosphere, open to smiles and even laughter. Guidance in this case is a matter of dramatization and/or a certain mystery, even an air of discovery, or riddles, charades, puns, word games; manipulation can also be used. It is essentially a creative posture that has a strong evocative power. This helps the teacher as he or she looks to express the same knowledge in different forms and to encourage the personal construction of the same knowledge in different learners.

From these six postures, we have characterized the phenomenon of postural dynamics.

6.3.2. *Postural dynamics: maintaining, reducing or strengthening a posture*

The phonemenon of postural dynamics aims to reflect the evolution of the teacher's behavior according to six postures that can be implemented in the same measure. It results in two states that are not successively located within the same measure but, rather, an initial state associated with the launch of the measure and a final state when the measure ends. We have dubbed it the phenomenon of postural dynamics because the difference between the initial state and the final state reveals changes in the choice of postures adopted by the teacher.

Indeed, the teacher can choose (or not) to reinforce or reduce a posture. This leads him or her to exercise a real strategy in the different postures, which are like levers that can be manipulated according to the objective assigned.

In order to illustrate this dynamic as accurately as possible, we use two radar diagrams, each axis corresponding to the six postures defined previously. The first diagram concerns the beginning of the student empowerment process (the first session), while the second diagram represents the end of the process (the last session). The difference between these two diagrams, as well as the others that are not represented here but which are intermediate, makes it possible to capture the postural dynamics at work during the same design.
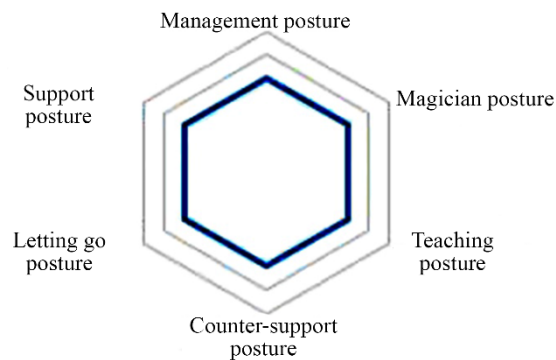

Figure 6.1. *Beginning of the process of deploying the teaching posture*

At the beginning of the process, the diagram takes the form of a regular hexagon in which the six postures are balanced and not yet invested. According to Bucheton and Soulé (2009), the six postures constitute a range of possibilities for assistance and support in conducting a teaching sequence. Although all teachers have this range and will use it differently in the same teaching situation, it is important to note that, in practice, new teachers have more difficulty using and varying the nature and number of these postures during the same teaching situation.
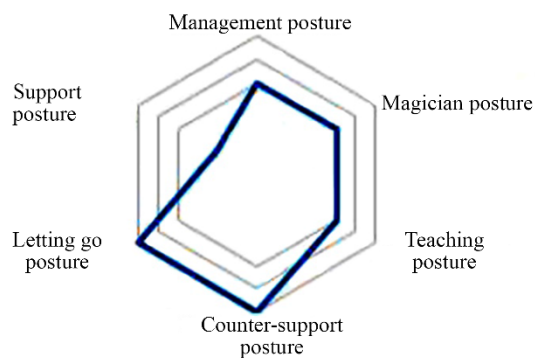

Figure 6.2. *End of the deployment of the teaching posture*

At the end of the process, the diagram is no longer in the form of a regular hexagon: this is indicative of the dynamic between the initial and final states.

In France, the aim of this is to allow all teachers to question themselves about the assistance and support they offer throughout the same teaching session or, possibly, over several sessions.

Having outlined the main principles of this postural dynamic, we will now apply it to the development of student autonomy within the Institut universitaire de technologie (Béziers University of Technology, IUT) in Béziers.

6.4. Use of postural dynamics in the development of autonomy

Autonomy is a skill (Perrenoud 1995) that is a part of the ability of the student to depend less on the teacher for the benefit of selected and measured human and technological resources. It is a core and transversal competence that enables acting, understanding and succeeding in the most diverse situations.

Yet autonomy is not a competence like any other and it is not possible to learn to be autonomous through a system in which this is the only objective. As with critical thinking development, courses dedicated to autonomy cannot be taught: rather, it is a skill that must be integrated with other subject content (Albero 2000), while focusing learning on specific areas.

With this in mind, a system has been in place for five years at the IUT, postulating that an approach which is less guided, more distant and increasingly peer-oriented contributes to the development of autonomy (Lédé and Pélissier 2018). After having presented this measure, we will show how the previously explained postural dynamics are engaged throughout the semesters of training and the different sessions.

6.4.1. *Presentation of the "Writing for Digital Media" system*

The system we are presently describing takes place within a university that still remains too focused on teaching content (Linard in [Albero 2003]). While it is crucial, at a time when self-training is developing, to consider knowledge regardless of its origin (teachers and/or peers), to have multiple fields of application of autonomy and to have the autonomy to develop each piece of knowledge, our system is based on disciplinary knowledge and places the assistance offered by the teacher at an ever-increasing distance. More specifically, the system implemented is based on the work of Brigitte Albero (2000), who identified seven areas of application of

autonomy: technical, informational, methodological, social, cognitive, metacognitive and psycho-affective.

Technical autonomy is defined as the ability to master different technologies by adapting to different contexts while being able to find assistance in cases of difficulty. Informational autonomy, on the other hand, concerns the use of information of an individual, through the mastery of appropriate research tools, in order to collect, store, manage or share relevant data. These first two areas are complemented by methodological autonomy, which refers to the individual's ability to organize his or her work in order to achieve the objectives set according to the constraints imposed, such as time, family constraints or meeting deadlines. The fourth area of application of autonomy is at the social level. This pertains to a person's ability to communicate with their peers, whether for information sharing, cooperation or even exchange. The fifth domain can allow the individual to perform collaborative work or make requests for assistance. The notion of connection, highly represented in social autonomy, remains present in cognitive autonomy, which refers to a person's ability to make a connection between various elements and to analyze and understand them (or to detect what they do not understand). This is accompanied by the last two areas: metacognitive and psycho-affective. By metacognitive, the author refers to the subject's reflexive ability to reflect on his or her own actions and performances in order to implement appropriate regulations if necessary. Finally, the psycho-affective area concerns the subject's distance from learning, which allows him or her to regulate his or her emotions and to tolerate uncertainty and risk-taking while assuming his or her share of responsibility.

The system we have set up aims to develop the seven areas of application of autonomy through an approach that is progressively less guided while increasingly peer-oriented and distant. This "empowerment approach" is structured by the institutional bodies[6] associated with the IUT in the form of four training modules entitled "Writing for Digital Media" (Écriture pour les médias numériques), organized over the two-year span of the university technology degree (diplôme universitaire de technologie, DUT) and spread over four successive semesters (corresponding to the two years of the degree). In the system, we set autonomy as a perspective and not as an asset or prerequisite. Starting from the hypothesis of a gradual "disappearance" of the teacher in favor of peer support, our system, structured in four modules, integrates the use of the Moodle platform. Its place is gradually strengthened throughout the four training modules, which amounts to organizing a progression between four of the five scenarios proposed by COMPETICE. Indeed, COMPETICE proposes five scenarios with an ever-increasing share of distance learning: the enriched classroom, the improved classroom, the light

6 The *Programme pédagogique national* (PPN), French National Pedagogical Program, available online at: http://src-media.com/ppn-mmi.

classroom, the reduced classroom and the almost non-existent classroom. These scenarios are thought to be independent, but we have chosen in our system to propose them successively, with the exception of the enriched classroom, which the students should have already experienced when they were in high school. As such, during the four semesters, students will be successively confronted with the improved classroom, the light classroom, the reduced classroom and the almost non-existent classroom. Each semester is composed of lectures, tutorials and practical work. Semesters 1 and 2 are taught by one teacher, while semesters 3 and 4 are taught by another.

The entire first semester (lectures, tutorials and practical work) takes place in person, but Moodle is integrated into the approach: the objective is to make students aware of the existence of "upstream" and "downstream" classrooms. In continuity, the proportion of attendance in semester 2 is reduced as the lectures are given remotely, while the tutorials and practical work remain in the classroom. Semester 3 continues this dynamic by giving lectures and tutorials remotely, while practical work remains in the classroom. Finally, the fourth semester takes the form of remote project management where all stages take place on Moodle and via videoconference (especially for project monitoring points requested by the teacher), with the exception of the two classes: launch (the first) and the final defense (the last), where students present the production that was the subject of semester 4.

Table 6.1 summarizes the modality of each semester according to its components.

In this progressive empowerment system, the teacher will have to implement a real strategy for adapting his or her postures to achieve the assigned objective of strengthening the autonomy of students in the seven fields of application identified by Brigitte Albero.

	Modality	Lectures	Directed work	Practical work
Semester 1	Improved presence	Presence		
Semester 2	Reduced presence	Distance	Presence	
Semester 3	Reduced attendance	Distance		Presence
Semester 4	Presence almost non-existent	Distance		

Table 6.1. *Teaching methods for the courses associated with the "Writing for Digital Media" module*

6.4.2. *Application of the representation of postural dynamics*

Reflecting on the teacher's postural dynamics involves observing the behavior of both teachers throughout the different semesters. We have identified 23 observable elements distributed among the six support postures. These elements allow us to characterize the teacher's postural dynamics with a view to developing student autonomy in "Writing for Digital Media" modules. Comparing these different elements between semester 1 and semester 4 allows us to identify postures that are reinforced, decreasing or constant. Indeed, of the 23 observable elements, 15 underwent significant changes (68%).

The control posture is demonstrated by six elements: the group's progress in synchrony (since each session is included in the students' timetable), the teacher's collective address to the group, the interconnection gestures made by the teacher, the follow-up of the evaluations' results, the need (or lack thereof) to carry out evaluations and the presence of a final evaluation. The comparison between semester 1 and semester 4 shows that it was barely impacted between the beginning of the process and the end of the process. Indeed, among the six elements observed, only the collective address to the group changes between the beginning and the end of the system. As a result, during the first semester, the teacher collectively addresses the students at each session to announce the content of the session and then reminds them of the deadlines, particularly with regard to future reports. This address has completely disappeared by semester 4 when students must use the resources (videos) available on the Moodle platform to identify the content of each session and the deadlines to come. Apart from this salient point, the other elements observed do not change much during the design presented. Each session remains on the agenda with a requirement for student attendance. Similarly, interconnection gestures are performed at the beginning of each class to make the link with previous and subsequent classes. However, it should be noted that the form of these gestures varies since they are performed orally for each session in semester 1, while they are performed on the Moodle platform in semester 4, orally (during videoconferences) or in writing on the discussion forum. Interconnection gestures are therefore always present, from semester 1 to semester 4, although their frequency and shape are changing.

The monitoring of results is also constant throughout the system as the teacher checks that the students complete tasks within the prescribed deadlines and reminds them if they do not. As with interconnection gestures, this becomes less common in form and frequency throughout the semesters, but the follow-up of the results remains present in semester 4. Evaluations also remain mandatory, and a final evaluation time is planned for each "Writing for Digital Media" module. The control posture is consequently not greatly affected throughout the system since only one behavior out of the six observed (i.e. 16%) undergoes a change likely to make it

disappear, while for the other elements, the main changes take place regarding the frequency or the less directive tone used. The foundations of the control posture are therefore not called into question during the process: this is explained by the fact that it is strongly linked to institutional obligations (status and functioning of the IUT), such as the presence of students in class or the number of returns.

The teaching posture is manifested by the content formulated by the student during the different periods of interaction with the students (in the lecture hall amphitheater, during self-assessment quizzes, during tutorials and practical work class sessions). It seems logical that this posture remains present throughout the design, even if it evolves in form. Indeed, the share of distance learning increases throughout the process, which implies a transfer of the teacher's posture to interactive modules and quizzes on the Moodle platform. However, this posture can also be exercised by the teacher directly if the students request clarification by email or the discussion forum, for example. As with the previous posture, we cannot observe a profound evolution of the teaching posture during set-up because only the form evolves. We therefore consider it to be constant.

The magician's posture can be observed in our system of building autonomy through the choices made by the teacher in his or her way of teaching, which is demonstrated by an emphasis on the content proposed, the links displayed with the professionalizing objective of the training, the call for resources known and used by students, or the use of dramatization. Between semester 1 and semester 4, some changes can be noted, but the posture is still present. The changes observed are essentially formal: first, at the launch of semester 4, which is held in person, the teacher dramatizes the fact that he or she will leave Moodle in order to "give students their freedom", provoking laughter and reducing the dramatization of the upcoming change in which he or she will only be present virtually. This choice is in line with the objective of making the student "autonomous" in a professional context with which he or she will be confronted at the end of his or her second year. Secondly, the enhancement of certain elements (deadlines, content) contributes to the deployment of this same integration objective. Although the courses are taught by two different teachers, they have made concerted choices to mobilize examples that can quickly justify the development objective autonomy, anchoring it in real professional practices such as the use of existing online resources (e.g. OpenClassrooms) to develop new skills not learned in initial training. However, we cannot speak of a structural evolution of the magician's posture, which is still considered constant.

The counter-support posture is strongly correlated with the concept of assistance. It can be observed in our system through three elements, including giving the answer to students providing technological assistance and providing pedagogical assistance. In the last two semesters, the teacher never gives "the answer" to the students. This

is explained by the fact that there is not one, singular answer but several possible ones. In order to empower the learner, it is essential that he or she learns from the beginning of the training to build his or her answers, formulate them, argue them and even demonstrate them. On the other hand, the nature and amount of assistance provided changes significantly. In semester 1, the support is exclusively pedagogical because the teacher provides examples of results or solutions close to the task the student must perform, if necessary. In semester 4, the teaching assistance is absent and replaced by technological assistance. Indeed, during this semester, students must complete an online course on a Moodle platform using a SCENARIchain editorial chain. These two softwares require a good command of the language, which is not the main objective of the course, while the students are in a distance learning situation. Consequently, the teacher is called upon to provide proactive and/or reactive technological assistance in order to overcome possible blockages. In this way, he or she may have to upload aid resources or take charge of the editorial chain to take the necessary steps in place of the students. Assistance is available in the system from semester 1 to semester 4 to facilitate the student's approach, but it varies greatly. As a result, two of the three elements observed (66%) are impacted. We therefore consider the counter-support posture to be significantly reinforced during the self-nomination process.

The support posture can be observed by means of six elements in our system of building autonomy: the opening of the sessions, the time it takes to respond to the learner's requests, the instigation of discussion time, the existence of a quantified evaluation, the direct interventions of the teacher and the actions carried out by the teacher during the session. For five out of six items (83%), a large change is noted. Indeed, only the opening of the meetings does not change between the beginning and the end of the system. In semester 1, the teacher points out the students who are present and announces the instructions for the session, which is related to the institutional obligations regarding the control posture. The form of the roll call changes in semester 4 compared to semester 1 and takes place by videoconference (synchronous audiovisual exchanges). The systematic nature of the instructions is also different: the teacher does not announce the instructions orally in semester 4; they are in a written format on Moodle. However, the teacher answers students' questions on this subject and gives them the means to find them on Moodle. All other observed elements develop more strongly. The response times are deliberately very short in semester 1: the teacher responds to students' requests within 1 hour and 30 minutes. The approach is very different in semester 4: the teacher deliberately takes a long time to answer questions (more than four days) and encourages students to ask questions on the discussion forum as much as possible. This behavior has an impact on discussions between students. In semester 1, the teacher does not instigate any discussion points, while in semester 4, he or she provokes a maximum of exchanges between peers. This is to allow students to respond more quickly to each other and to only call on the teacher if no alternative is possible.

The methods and frequencies of the evaluation are also greatly affected throughout the process. At the beginning of the course, the assessments are quantified and carried out exclusively by the teacher with intermediate steps before the final assessment. At the end of the process, the evaluation is carried out by peers during the intermediate stages. During project monitoring, the teacher gives some recommendations and advice but does not give any figures. Only the final defense is exclusively quantified by the teacher. Lastly, the teacher's actions also undergo a noticeable evolution during the process. As a result, in semester 1, the teacher acts proactively by seeking to anticipate the difficulties encountered by students. In semester 4, the teacher acts reactively by simply responding to requests from students who have a wider range of ways to contact him or her (email, forum, chat and videoconference slots). All the changes observed in the support posture are explained by the progressive temporal responsibility of students throughout the system. This empowerment is reflected in an increasingly long response time to the exercises; the establishment of a discussion time between the teacher and different groups of learners, which makes it possible to set time milestones while facilitating collaboration and intra-group exchange, and an increasingly decentralized evaluation/intervention/action from the teacher towards peers who can form questions, give advice and provide solutions for others. Even if the teacher is becoming progressively less visible, he or she gradually offers a wider selection of different technical means of contacting him or her.

Finally, the letting go posture is observed in the system through three elements: the right to make mistakes, the existence of evaluation grids formalized by the teacher and the physical presence of students within the IUT. The three elements observed underwent significant changes during the system and are all impacted (i.e. 100%). The right to make mistakes that did not exist in semester 1 becomes the rule in semester 4, where only the result of the final defense argued and presented counts. Students must therefore organize themselves on the basis of the different milestones (technical and temporal) communicated by the teacher when the project was launched, even if safeguards exist through continuous dialog with the various actors in the system. The evaluation grids developed by the teacher in semester 1 (which include key lecture elements) are used directly by students in semester 4 as regulators of their actions. The letting go posture also decreases due to a physical presence at the IUT, which is mandatory in semester 1 and becomes optional in semester 4. During this last semester, the student simply needs to be connected, and using his or her computer, the roll call is recorded by webcam during the first five minutes of each course. However, he or she can connect from anywhere (home, public place), and group work (several students connecting from the same place) is valued. The letting go posture is therefore the one that most greatly evolves of all the postures described.

However, the importance of the right to make mistakes must be put into perspective, since the institutional obligations related to obtaining a university technology degree are real (university tutors receive annual statistics related to student success in relation to their absence rate and their professional integration rate). On the other hand, the other aspects of this posture show the teacher's desire to make students evolve in light of the subjective reality of evaluation (the grid is developed by the students and the criteria set by the teacher correspond to elements that can be observed objectively) that is similar to that practiced in a professional context. The objective of professionalization is also demonstrated in the autonomy granted in time management, which is institutionalized in semester 1 (a one-and-a-half-hours course) and then delayed in semester 4 (several-hours-long course according to students' needs).

The student empowerment system set up as part of the university technology degree program at Béziers University of Technology therefore makes it possible to identify three main types of dynamics between the postures that are reinforced, decrease and remain constant. Table 6.2 summarizes the number and nature of the developments observed.

Posture	Number of elements observed	Number of elements evolving	Amount of change	Dynamics
Control	6	1	16%	Constant
Teaching	1	0	0%	
Magician	4	0	0%	
Counter-support	3	2	66%	Reinforcement
Support	6	5	83%	Decrease
Letting go	3	3	100%	

Table 6.2. *Evolution of the distribution of teaching postures during the module "Writing for Digital Media"*

In Table 6.2, we can therefore see that the control, teaching and magician postures are constant: they do not change at all or only slightly throughout the system set-up. On the contrary, the release and support postures decrease as the counter-support posture is strengthened.

6.5. Conclusion

In this chapter, we have proposed a representation of the dynamics of the teaching posture in its training system. This dynamic is articulated around six postures that were identified around 10 years ago through the work of Bucheton and Soulé. These postures were questioned in the context of the integration of digital technology (Moodle, videoconferencing, chat, discussion forum) and distance learning (absence of the teacher in class) into university teaching.

These different postures were then tested against a hypothesis proposed by two teachers at IUT: it is possible to develop the autonomy of undergraduate students by proposing a two-year system involving the different postures of the teacher in a specific system.

The results of the experiment show by analyzing 23 observable elements that, as the device progresses, some postures are constant, others decrease and others are reinforced. Although the number of elements observed may seem limited, it does show how the proposed method offers opportunities to highlight university teaching practices. It opens the debate on the possibility of proposing methodological tools for analyzing university pedagogical practices and questions the possible recommendations for the deployment of teacher professionalization, as well as the autonomy of students, which is essential today for academic success.

6.6. References

Albero, B. (2000). L'autoformation dans les dispositifs de formation ouverte et à distance : instrumenter le développement de l'autonomie dans les apprentissages [Online]. In *Les TIC au cœur de l'enseignement supérieur*, Saleh, I., Lepage, D., Bouyahi, S. (eds). Université Paris VIII, Vincennes-Saint Denis. Available at: https://edutice.archives-ouvertes.fr/edutice-00000270/ document.

Albero, B., Linard, M., and Robin, J.-Y. (eds) (2009). *Petite fabrique de l'innovation ordinaire à l'université. Quatre parcours de pionniers*. L'Harmattan, Paris.

Benda, J. (2006). La trahison des clercs [Online]. Available at: http://classiques.uqac.ca/classiques/benda_julien/trahison_des_clercs/trahison_des_clercs.html.

Breton, P. (2005). La "société de la connaissance" : généalogie d'une double réduction. *Éducation et sociétés*, 15(1), 45–57.

Bucheton, D. (2001). Langages, savoirs et subjectivité. Summary note for the HDR, Université Paul Valéry, Montpellier.

Bucheton, D. (ed.) (2008). *L'agir enseignant : des gestes professionnels ajustés*. Octarès, Toulouse.

Bucheton, D., Bautier, E. (1997). *Conduites d'écriture au collège et LP*. Delagrave, Paris.

Bucheton, D., Soulé, Y. (2009). Les gestes professionnels et le jeu des postures de l'enseignant dans la classe : un multi-agenda de préoccupations enchâssées. *Éducation et Didactique*, 3(3).

Charlier, B., Deschryver, and N., Peraya, D. (eds) (2006). Apprendre en présence et à distance : une définition des dispositifs hybrides. *Distances et savoirs*, 4(4), 469–496.

Compiègne, I. (2011). *La société numérique en question(s)*. Sciences humaines éditions, Auxerre.

Depover, C., De Lièvre, B., Peraya, D., Quintin, J., and Jaillet, A. (eds) (2011). Introduction [Online]. In *Le tutorat en formation à distance*, Depover, C. (ed.). De Boeck Supérieur, Louvain-la-Neuve, 11–12. Available at: https://www.cairn.info/le-tutorat-en-formation-a-distance--9782804163426-page-11.htm.

Deschryver, N., Lameul, G. (2016). Vers une opérationnalisation de la notion de posture professionnelle en pédagogie universitaire [Online]. *Revue internationale de pédagogie de l'enseignement supérieur*, 32(32–3). Available at: http://journals.openedition.org/ripes/1151.

Lameul, G. (2008). Les effets de l'usage des technologies d'information et de communication en formation d'enseignants, sur la construction des postures professionnelles [Online]. *Savoirs*, 17(2), 71–94. Available at: https://www.cairn.info/revue-savoirs-2008-2-page-71.htm.

Lédé, S., Pélissier, C. (2018). Des indicateurs pour le développement de la compétence d'autonomie : retour sur un scénario pédagogique en IUT [Online]. In *Actes du colloque ATIU saison 2*. Montpellier. Available at: https://hal. archives-ouvertes.fr/hal-01936356/document.

Linard, M. (2003). Autoformation, éthique et technologies : enjeux et paradoxes de l'autonomie [Online]. In *Autoformation et enseignement supérieur*, Albero, B. (ed.). Hermes/Lavoisier, Cachan, 241–263. Available at: https://edutice. archives-ouvertes.fr/edutice-00000276/document.

Nissen, E. (2007). Quelles aides les formations hybrides en langues proposent-elles à l'apprenant pour favoriser son autonomie ? *Alsic*, 10(1).

Pélissier, C. (2014). Le processus d'aide dans un dispositif numérique. *Formation et Profession*, 22(1), 41–52.

Perrenoud, P. (1995). Des savoirs aux compétences : de quoi parle-t-on en parlant de compétences ? [Online]. *Pédagogie collégiale*, 9(1), 20–24. Available at: http://www.unige.ch/fapse/SSE/teachers/perrenoud/php_main/php_1995/1995_08.html#copy right.

Porcher, L. (1989). Les chemins de la liberté. In *Autonomie et enseignement-apprentissage des langues étrangères*, André, B. (ed.). Didier, Paris.

Pratt, D.D., Associates. (1998). *Five Perspectives on Teaching in Adult & Higher Education*. Krieger Publishing, Malabar.

Prosser, M., Trigwell, K. (1999). *Understanding Learning and Teaching. The Experience in Higher Education*. SRHE and Open University Press, Buckingham.

Saint-Amand, D., Vrydaghs, D. (2011). Retours sur la posture [Online]. *Revue de sociologie de la littérature*, 8. Available at: https://journals. openedition.org/contextes/4712.

Vergnaud, G. (1996). Au fond de l'action, la conceptualisation. In *Savoirs théoriques et savoirs d'action*, Barbier, J.-M. (ed.). PUF, Paris.

Supporting the Transformation of Teaching Practices in Higher Education

7.1. Introduction

The program-based approach (PBA) has been one of the contemporary transformations of higher education. It is based on the collective work of a teaching team that is involved in the development of a project and a training program (Prégent *et al*. 2009). In order to meet these institutional demands, for which higher education teachers are poorly prepared (Berthiaume and Rege Colet 2013), the *Institut français de l'éducation de l'École normale supérieure de Lyon* is setting up research-interventions to support teachers engaged in this approach. This form of support has two aims: on the one hand, to develop a training program and, on the other hand, to sustain the professional development of higher education actors, particularly teachers (Loisy 2018a). To this end, the proposed support refers to a position (Paul 2009) that could be briefly defined by an attitude focused on listening and follow-up. The objective of this support is to encourage the teacher to engage in a development approach. Here, in this case, the aim is to encourage all teachers, once the support process has been completed, to pursue their own professional achievements and developments, and to use this autonomy by developing a support system (Peeters and Charlier 1999).

This chapter describes the continuity of the support process as proposed in our research. This begins with collective activities that, with the support of a collaborative digital blog, lead teachers to formalize the pedagogical activities they plan to implement with their students, while developing new collective practices at

Chapter written by Catherine LOISY.

the level of the team of teachers developing the curriculum for a master's degree at the ENS (École normale supérieure) in Lyon. The support process continues with the implementation of a systematic process of exploring the activity that encourages teachers to reflect on their own pedagogical practices. This process also allows us as researchers to identify indicators in the professional development process of teachers as they formalize their pedagogical activities. We seek to identify whether, and if so how, the experience they have had during the first phase of support engages them in a process of transforming their pedagogical approaches.

After having developed the issue of support for teachers engaged in a PBA, two particular support systems are presented. The first is the one designed to jointly support the development of the master's program and the specifications of an application designed to enable them to disseminate the elements of their courses. The second is the systematic process of exploring the activity which participates in the support process through reflection on pedagogical practices. The results of this research are then presented. They highlight that the support of collective work sustained by a collaborative blog promotes, among the teachers involved in the project, the identification and use of the Moodle platform as an aid to student learning. The results are discussed. Finally, we conclude the chapter with perspectives on the development of a course support application; the professional development of higher education teachers in the continuity of support systems and perspectives on the support process already initiated.

7.2. Problems linked to support for teachers engaged in a PBA

After presenting the research-intervention, this section sets out the theoretical framework associated with the professional development of teachers that is at the heart of the research objectives.

7.2.1. *Framework for the support process*

The support process is characterized by a position and a measure that will be developed in the methodological part. Before that, the issue of support is addressed here at a more general level, that of research-intervention that both questions and produces a support-based process.

7.2.1.1. *Integration of the issue of support in research-intervention*

The specificity of the research presented lies in the fact that it seeks to develop teachers' activities in order to understand and transform their work situations. For this reason, it can be considered a research-intervention. The activity of understanding is closely interrelated with the activity of transformation, a kind of mutual support

from which there are expected "effects both in terms of supporting professionals in their efforts to regain control over their activity, and in terms of producing knowledge on both the activity of the latter and on that of the researcher-intervener during the research-intervention process" (Saujat 2010, p. 68).

This research-intervention takes place within the framework of the support process of teachers who designed the master's degree in Information Architecture offered at the ENS de Lyon. This team is setting up this new master's degree in an emerging sector in France, that of information architecture. Another particularity of this research-intervention is the willingness of the training manager to make maximum use of the possibilities offered by digital technology to make his team work collectively, relying in particular on an online lesson plan editor developed in Canada (Dufour 2007). This master's degree is the field of DevSup research, the objective of which is to develop a model and an application dedicated to supporting higher education teachers engaged in a PBA.

7.2.1.2. *The objective of creating a tool to facilitate the support process for the actors involved in the PBA*

DevSup research-intervention is part of a context of transformation of the European higher education landscape following the Bologna Declaration. It has received the support of the MiPNES (Mission de la pédagogie et du numérique pour l'enseignement supérieur) of the DGESIP (Direction générale pour l'enseignement supérieur et l'insertion professionnelle) of the French Ministry of National Education, Higher Education and Research.

At the heart of the expected design of the support process for teachers involved in the PBA, the choice was made to model, design and develop a technological pedagogical system, including a digital application supporting the formalization of teaching (lesson plans, competency frameworks, learning situations) (Loisy and Sanchez 2016).

7.2.1.3. *The articulation of the production and research dimensions of the support process*

DevSup research articulates, on the one hand, pragmatic aims to develop a system and a tool to facilitate the support process of actors involved in the PBA and, on the other hand, heuristic aims to model the support by relying on an understanding of work situations (Loisy and Sanchez 2016).

To support this articulation, the DBR (Design-Based Research) paradigm (The Design-Based Research Collective 2003; Wang and Hannafin 2005), a method that allows training models to be instantiated in the form of digital applications for use in context, is used. The DBR is characterized by methodological principles that

are of particular interest in the context of the design and digital application of measures, such as the principle of the continuous redesign of measures; documentation of contextual influences; the need to collaborate closely with stakeholders; and conducting research in the natural environment. The intertwining of research and design is bilateral, iterative and continuous.

7.2.2. *Theoretical framework for professional development*

Professional development is part of a twofold support approach: the first is the collective production of the training program for the master's degree, and the second is support for the professional pedagogical development of teachers.

7.2.2.1. *The collective development of the program, a concrete objective of the support process*

The PBA refers to a teaching organization model based on a training project (Prégent *et al.* 2009). The training project, on the one hand, refers to the skills to be achieved and the values to be constructed by the end of the training. The program, on the other hand, refers to the distribution of teaching among teachers to achieve the expected competencies, both over time (over the course of the training) and spatially (coherence and completeness of teaching to achieve the targeted competencies). For these objectives to be achieved, the project and the training program must be designed collectively by the teachers of the pedagogical team mobilized for the occasion.

In fine, the PBA makes the lessons visible to all those involved in training: training managers, teachers, students and even potential employers of the trainees and institutional policy makers. To this end, DevSup research has set itself the objective of developing, in conjunction with the support of the actors who develop the project and the training program, an application that will support the program and then promote its visibility. This visibility concerns the profile of the graduate with the skills to be acquired during the training, the lessons that will be put in place to acquire them and the evaluations that will validate the acquisition of the target skills.

7.2.2.2. *The professional development of teachers, the aim of the support process*

The perspective refers to leading a collective towards common knowledge and a shared identity in a process similar to the individual's construction of "his own learning grammar, in a process of 'meta-learning'" (Éneau 2005, p. 11). According to the historical–cultural approach to development (Vygotsky 2014) and the original definition of professional development of Portelance and its collaborators (Portelance *et al.* 2014), professional development is defined as:

> an incessant process of self-movement; it results from the dialectical union between internal movement and the social worlds in which the professional interacts. His or her personality evolves in a systemic way, when the current forms of his or her development meet and can interact with new ideal social forms, and when the professional gives them meaning. The professional develops his or her capacity for action and an awareness of what plays a decisive role in his or her conduct, whether these decisive elements are internal or external, in relation to the different professional roles and responsibilities that fall to him or her in his or her professional field(s) of activity/activities). Professional development, supported by semiotic activities, is permitted if the professional can influence the environments related to his or her work environment. (Loisy 2018c)

This definition highlights the fact that professional development is potentially only possible under the conditions, on the one hand, of an encounter between the current forms of personal development and new social forms, and, on the other hand, through the attribution of meaning to these different social forms by the person concerned. It should be noted that the final social forms, those targeted, must be present in the environment to be part of the transmission–learning–development process. This is therefore a holistic approach to development, where the study of the environment is essential, not because it would have a decisive role as such, as "the environment is not the framework, but the source of development" (Vygotsky 1994), but rather through the meaning the professional attributes to it. Word-based activities are part of the development process.

In this research-intervention, which takes place in the French higher education context, where teacher–researchers receive little or no support in initial training (Fave-Bonnet 2011) on pedagogy as a way of teaching (Albero 2014) and where the collective work of teachers on pedagogical issues is still little developed (Berthiaume and Rege Colet 2013), DevSup's goals, in terms of the professional development of teachers, are, on the one hand, to support their understanding of the advantage that there is for student success in promoting dynamic and long-term forms of appropriation of knowledge by students (Portelance *et al.* 2014), and, on the other hand, to make them aware of the importance of working collectively as part of a pedagogical team to develop their own activity and work environment (Loisy 2018c).

7.3. Methodologies

The system set up to support the teaching teams in the development of the training program is presented here, followed by the systematic process of exploring the activity.

7.3.1. *The support system*

The support system is characterized by a supporting position and by support using a combination of artifacts or digital anthropotechnic objects (Rabardel 1995).

7.3.1.1. *The support position*

To support is to "join someone ... to go where they are going ... at the same time as them..." (Paul 2009, pp. 95–96). Support, according to the author, has four dimensions: a relational dimension, the idea of joining someone, of "being with" them; an operational dimension that corresponds to the development of the journey to be made together, the "going towards"; a dimension of cooperation that makes it possible to point out that the person supporting and the person supported act together; a dimension of belonging that reflects ideas of community and shared meaning. The ultimate goal of support is to make a companion autonomous, in the sense that they continue their learning and development processes once the support process has been completed.

A position is a set of beliefs, values and intentions that gives meaning to actions and is expressed in the professional gesture (Lameul 2016). More particularly, the support position integrates the dimensions defined above on the basis of Paul's work (Paul 2009). The gestures that will express it will involve valuing the supported; of elaborating the end of the road to be traveled together, keeping in mind the unpredictability of the goal to be achieved; of initiating the conditions to create a shared meaning; and of preparing the conditions that will allow the supported people to develop their own resources.

7.3.1.2. *A combination of digital artifacts at the heart of the support process*

To support the collective dimension of the work to be done by and with teachers, the DevSup support system includes a combination of digital artifacts organized around a collaborative blog (Loisy *et al.* 2013). This system is designed to provide support during the process for teachers as they prepare the training program and jointly design the application supporting the information related to the teacher. The latter is called ALOES (Assistant en ligne pour l'opérationnalisation de l'enseignement dans le supérieur), an online assistant for the operationalization of higher education.

The support system is designed as a two-dimensional system. On the one hand, the support has an intersubjective dimension; to this end, the "human" side of the system allows pedagogical engineers to have exchanges with teachers. These exchanges take place synchronously through monthly meetings of the teaching team and on-demand appointments, individually or in sub-groups, which can be in person or by videoconference, as well as asynchronously through emails and direct exchanges on the blog (Figure 7.1, bottom block).

On the other hand, the support process itself promotes productive and constructive activities (Samurçay and Rabardel 2004); to this end, the "technical" side of the system allows teachers to put into words, in written form, elements relating to their program design and their pedagogical activity, and to contribute to the enhancement of the ALOES application, a tool that must be "in their hands" to disseminate these educational elements that have been put into written form. This technical measure initially includes the lesson plan editor (Dufour 2007), which will gradually become the ALOES application, and a blog (Figure 7.1, upper block). ALOES makes it possible to train (Loisy *et al.* 2013) the trainee teacher (training engineering) and to provide the teaching-learning situations (pedagogical engineering). The blog is completed by other artifacts used to support productive and constructive activities (TitanPad, Scrumblr, etc.).
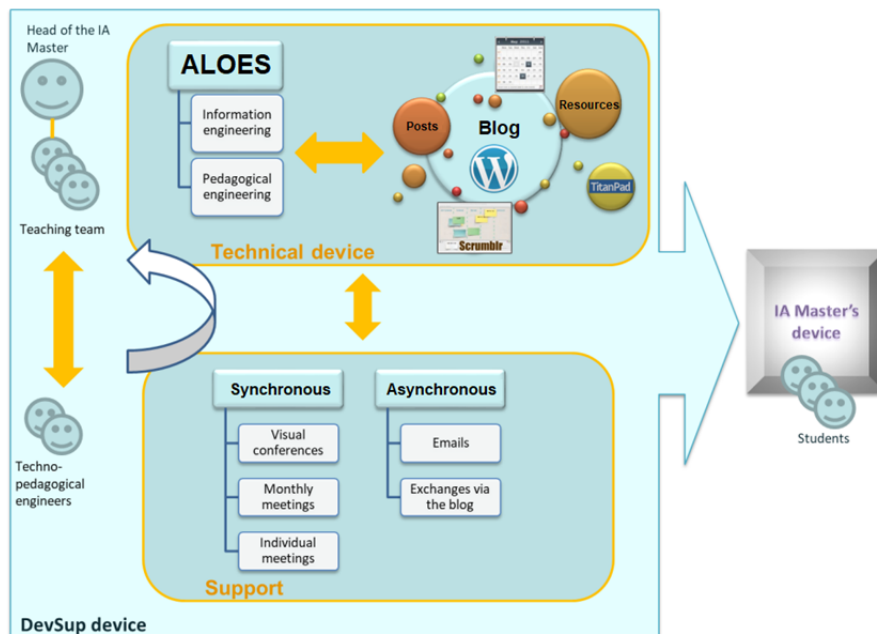
Figure 7.1. *The DevSup support system (Loisy et al. 2013). For a color version of the figure, see www.iste.co.uk/pelissier/education.zip*

The resources proposed in this system are organized into a system to put into words the elements of the training. If the teacher appropriates these artifacts, they will then become instruments (Rabardel 1995), mixed entities with both the artifact and the subject through the schemes associated with the artifact.

7.3.1.3. *Data collection and analysis method*

During the concomitant development of the master's program and the ALOES application, the exchanges within the teaching team during the groupings were recorded in sound format. The decisions made collectively were recorded. These decisions made it possible to produce the program and a prototype application. This application was then able to be operational before the actual start of the training, which allowed the elements of the training to be made visible to students from the first year of the master's program.

After one academic year of operation, individual semi-directed interviews were conducted with the head of the master's program and with teachers. These interviews had two aims: the first was to carry out a satisfaction survey on teacher support, and the second was to continue to improve the master's program and the ALOES application. Concerning this last point, the interview was based on a representation of the completion rate of the different items present in the ALOES application. These interviews were recorded and transcribed verbatim. A semantic analysis was carried out in order to capture whether the items that organize the description of the activity in ALOES (description, keywords, fundamental concepts, general objectives, specific objectives, general description of evaluation methods, methods and means of learning) were understood and used.

7.3.2. *The systematic process of exploring the activity*

In order to study whether research supports the professional development of teachers, a methodological tool has been developed. It aims to assess the technological pedagogical content knowledge of teachers (Mishra and Koehler 2006). This instrument is part of a systematic process of exploring the activity (Loisy *et al.* 2017).

7.3.2.1. *Using the TPaCK model to facilitate activity exploration and as a survey instrument*

The hypothesis was put forward that teachers who had received support in developing the master's program and the ALOES application would potentially develop new pedagogical practices. To verify this, instead of conducting a traditional semi-directed interview on pedagogical practices, a methodological tool supporting the exploration of pedagogical activity, thus participating in the support process, has been developed. In addition, several of our studies show that the use of visual expression encourages people to step back from objects at work (see, for example, (Loisy 2018b) on development trajectories). A form that is simple for respondents to appropriate in a research interview, but that is scientifically supported, is sought.

In line with these considerations, the TPaCK (Technological Pedagogical and Content Knowledge) model developed by Mishra and Koehler (2006) was seen as a good candidate. These authors are based on the Shulman teachers' pedagogical development model (Shulman 1987) which specifies knowledge of the subject to be taught (CK: Content Knowledge) and their didactic transposition (PK: Pedagogical Knowledge). Mishra and Koehler (2006) add a specific technological dimension (TK: Technological Knowledge). Their partially overlapping three-circle model, the TPaCK, therefore identifies and articulates professional knowledge enabling integrating digital technology into practices. The TPaCK model situates teachers' expertise in the simultaneous use of this knowledge, the ability to:

> understand information technology broadly enough to apply it productively at work,… to recognize when information technology can assist or impede the achievement of a goal. (Koehler and Mishra 2009, p. 64)

This model is used as a framework for analyzing the technological pedagogical content knowledge of the teacher as it can be derived from the corpus of documents produced in the ALOES application. The TPaCK is not only used as an analytical framework, but also as a support for a visual representation of this technological pedagogical content knowledge thus identified. Figure 7.2 shows an example of a visual representation obtained from the analysis of the data entered in ALOES by teacher A–D.
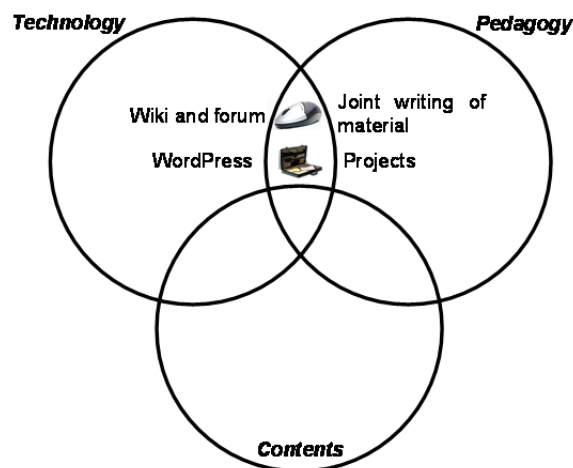

Figure 7.2. *Example of a visual representation created by the researchers based on the analysis of the data entered in ALOES by teacher A–D (Loisy et al. 2017)*

The example shows how the three circles of the TPaCK are represented. The teacher had written "Co-writing materials via wiki and forum" in the "Teaching methods and means" form of the ALOES application: these elements are reported at the TPK (technical and practical knowledge) intersection. The choice was made to not include the articulations of the TPaCK triad on visual representations because, although the level of the teaching unit (TU) gives indications for the themes taught, it does not allow access to specific content.

7.3.2.2. *Data collection and analysis method*

After an open-ended question on the effects that teachers perceive from their participation in the collective preparation of the master's program, as part of the support set up in the DevSup project, the interview continues with a self-confrontation interview phase, where the visual representation from the analysis of the documents present in ALOES (an example of which is given in Figure 7.2) becomes a collection instrument. Indeed, during this interview, the visual representation is an incentive entry built from traces of the activity, like a lesson video, which the researcher shows to the teacher in order to encourage them to think about their own activity (Faïta and Saujat 2015). The teacher must then complete the visual representation by adding the TPK (technical and practical knowledge), TCK (technical and content knowledge), PCK (practical and content knowledge) and TPaCK interactions that could not be detected from the analysis of the traces present in ALOES, and they must explain their choices.

As a result, the support process continues with an active process of formalizing technological pedagogical content knowledge, and the methodology developed falls within the framework of professional development methods that meet the challenges given to support. The recorded interviews are transcribed and then analyzed through coding. A thematic content analysis is performed based on the TPK, TCK, PCK and TPaCK interaction types.

7.3.3. *Population surveyed*

A panel of five teachers from the master's in Information Architecture participated in a semi-directed individual interview. These teachers were selected in such a way to represent a diversity of disciplines. Three of them were part of the "master's office", a team close to the head of the master's degree who made the decisions; the other two were not. There was only one female teacher in the master's at the time of the collection and she was selected. Four respondents had been on the teaching team since the program design was launched, and one teacher recently arrived. None of them received initial training in the teaching-learning processes, and the Lyon ENS does not have a structure such as a "university pedagogy center".

The head of the master's and one of the pedagogical engineers also carried out the satisfaction survey.

7.4. Research results: assistance to achieve support

The results are structured around:

– an application created at the same time as the training program was being developed;

– a satisfaction survey on the program created;

– a study of the technological pedagogical knowledge of the content developed by the teachers during the project.

7.4.1. *ALOES application*

During the meetings focused on the development of the master's program, the teachers developed the lesson plan (Dufour 2007) to move towards the ALOES application (Loisy and Sanchez 2016). A consensus emerged in the first year that the following elements should be formalized in ALOES for each TU: description, keywords, fundamental concepts, general objectives, specific objectives, general description of assessment methods, methods and means of learning, etc.

To these elements that were agreed upon by the teaching team, the researchers and pedagogical engineers piloting DevSup, who also provide optional teaching in the master's program, wanted to add a page to describe the learning situations. From a pedagogical point of view, the application makes it possible to formalize all the key elements of a sequence, from the definition of its objectives to the evaluation.

First of all, it should be noted that, during the first year of operation of the master's degree, the "Pedagogical situations" page was filled in only for the TU provided by the researchers who manage DevSup research; it was therefore not subsequently modified. Following the satisfaction survey (see section 7.4.4.1), the application took the following form.

The program part presents the general aspects of the master in three pages:

– program presentation: links to the institutional program presentation page (university level);

– course*:* brief presentation of all TU in the program;

– competency framework.

The TU part is five pages long:

– presentation of the TU: mandatory fields (title, number of credits, description), plus the possibility of adding fields at the convenience of users;

– information corresponding to two items present in the initial version, "Keywords" and "Basic Concepts", because the semantic analysis of the interviews revealed that these items were duplicative, with teachers informing one or the other, and they were therefore grouped into a single item;

– learning objectives with the general objective to be selected from the list of master's degree objectives defined collectively and implemented in the application, with the specific TU objectives to be formalized by the TU teacher to make them explicit (Figure 7.3);

– sequences and evaluations include the description of the evaluation methods, and the learning methods and means;

– skills: a system of hyperlinks enabling directly selecting the skills in the repository from the TU page. Note that these links work both ways. As a result, the skills selected in the TU are marked in the reference frame as being targeted for teaching, which makes it possible, once all TUs have been filled in, to check that the program makes it possible to acquire all the skills defined in the profile (completeness).

Figure 7.3. *Extract from a page of a course available on the ALOES application. For a color version of the figure, see www.iste.co.uk/pelissier/education.zip*

Figure 7.3 from ALOES presents the specific objectives associated with the general objective "Putting information architecture in the long history of information services and recent web services", from the TU "Introduction to information

architecture". Each line in this table indicates a specific objective, the weight of this objective in the TU (the percentage reflects the importance of this objective at the TU level; it is based on a qualitative estimate made by teachers working on the TU), the number of productions evaluated to which this objective is linked and the number of associated competences (the application makes it possible to identify the competences referred to in the specific objectives by checking them in a list previously completed by the person in charge of training).

7.4.2. *Satisfaction survey on the jointly developed program*

Beyond what has just been said about the elements to be improved upon in the ALOES application, the satisfaction survey reveals that, notwithstanding its weaknesses and the workload involved in filling in the items, the ALOES application is perceived positively by all respondents. The program jointly developed by the teaching team is also satisfactory to all respondents, even if it is also likely to change: "In any case, it is iterative work and neither the program nor the competency framework is fixed and these are things that are intended to evolve and move" (J.P., teacher). The development of the program is seen as an opportunity to take into account the feedback on the program from students and the companies who receive them on internships.

From the point of view of the PBA, the program is perceived as coherent and comprehensive, and as making it possible to build the skills expected by future recruiters. Beyond the application, it is the entire support process that is perceived positively: the particular interest of the respondents lies in the fact that having discussed the master's program at the level of the teaching team, then having made explicit its pedagogical choices, and finally having objectified them in ALOES facilitates the dissemination of teaching content to students, and even to companies likely to offer internships for students. Moreover, it appears that making teaching content visible is part of a "clear contract with objectives, a process, evaluations" (B., teacher) that binds teachers and students and that everyone feels they must respect it, including teachers.

The survey also identifies two actors who are perceived by respondents as having played a decisive role. The educational engineer helps teachers to fill in the ALOES application fields: "Teachers are not very used to it and you have to support them in their thinking and writing" (J.-M., head of the master's). The head of the master's is a manager who plays a decisive role: he is a leader who embodies the vision of the master's, and he is a coordinator who defends the collective approach to the development of the program. The former plays a role in the support that cannot be fully analyzed, in particular because the individual interactions he has had with teachers have not been registered. The second does not play a role in the

support, but it may have helped to build a shared goal within the teaching team. The discussion will return to these two roles and the need, or not, to distinguish them.

7.4.3. *Technological pedagogical content knowledge developed*

The semi-directed interview allows respondents to point out some pedagogical changes: "involving students by getting them to lead a project" (V-D), but it is the interview with the TPaCK visual representations obtained from the analysis of the data entered in ALOES that best captures the technological pedagogical content knowledge. Figure 7.4 illustrates JP-D's content, as he represented it during the instrumented interview, for the TU on "Introduction to the Digital Humanities".
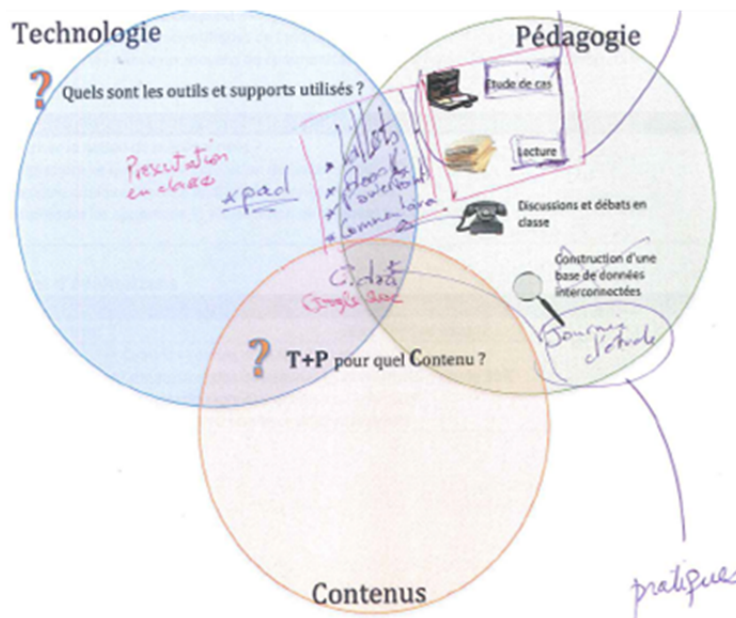
Figure 7.4. *Visual representation completed by JP-D during the research interview (Loisy et al. 2017). For a color version of the figure, see www.iste.co.uk/pelissier/education.zip*

The typed elements are those prepared by the research team from the analysis of the elements of this TU present in the ALOES application. This first analysis revealed only pedagogical elements (case studies, readings, classroom discussions and debates, construction of interconnected databases). In ALOES, nothing was mentioned about the digital technologies used. As a result, the first analysis carried

out on the basis of the content in ALOES did not identify whether technological pedagogical skills were being used.

During the interview (manually written elements with blue and red pens), JP-D crossed out the teaching on "Building an interconnected database" which was cancelled, and added "Study days". For the case studies, he provided details on "Theoretical and practical mix", and added "Theoretical" for the readings. In the "Technology" sphere, he noted "Class Presentation" (in red) and "Pad" (in blue). At the TPK intersection, he mentioned in a red rectangle "Tickets; Moodle; PowerPoint; Comments". The posts are blog posts; the comments are annotations in the online shared course documents. JP-D added "G.doc Google doc" and linked it all at once to "Study Days". The choice was made not to ask respondents to enter TU content in the diagram, as they had a different figure to enter for each TU (Loisy *et al.* 2017).

On all the visual representations produced by the five respondents during these interviews, a variety of TPaCK articulations were found. Data analysis shows that teachers are integrating digital technology into active and innovative pedagogical practices. For example, for formal education, they use not only presentation software, but also commenting tools (Crocodoc) to have students annotate course slideshows, and online collaborative text editors (pads) to encourage group notes on the content taught. Students are also encouraged to use wikis and forums when developing group projects, and digital communication and dissemination tools to learn how to communicate about their productions (e.g. digital warehouses). Moreover, when several courses are given by the same teacher, the analysis reveals a flexibility of the TPaCK articulations according to the content taught. This flexibility is considered characteristic of a nuanced understanding of the relationships between content, pedagogy and digital technology.

7.5. Discussion

7.5.1. *Discussion of the results*

The teachers interviewed, as a whole, use a wide range of digital artifacts for functions similar to those represented in the support they received when the master's program was developed.

This range of digital artifacts (Figure 7.5) is at the service of student learning, as the study carried out using the systematic process of exploring technological pedagogical content knowledge shows. The respondents' discourses highlight that such pedagogical practices focused on the students' learning have appeared thanks to the support established in the DevSup project. It can therefore be said that, among the teachers interviewed, the support approach assisted pedagogical learning

(observable in the new practices) and transformations in their vision of the transmission-learning processes revealed during the interviews, transformations that are a sign of real professional development.
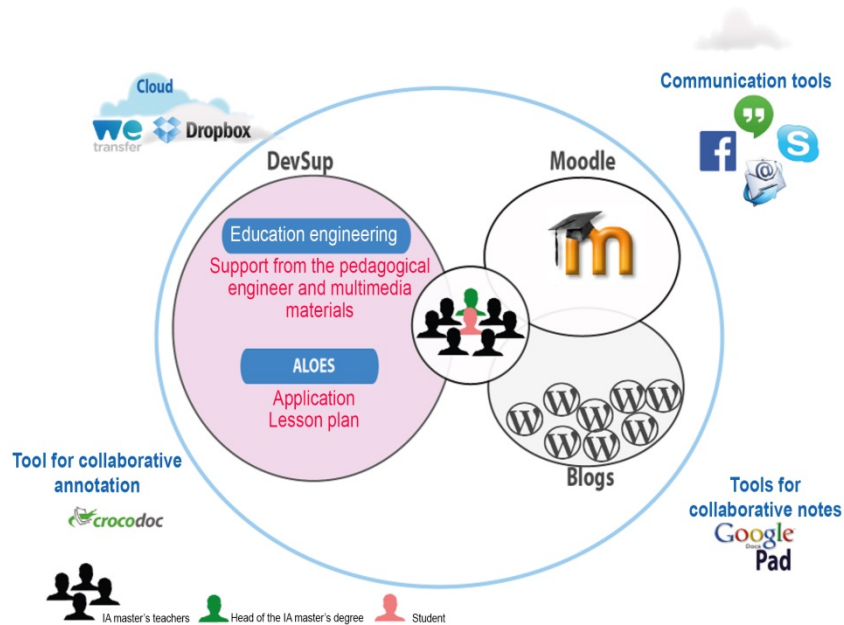

Figure 7.5. *The range of digital artifacts supporting the learning of master's students in Information Architecture (Loisy et al. 2014). For a color version of the figure, see www.iste.co.uk/pelissier/education.zip*

Among the respondents, the encounter between their forms of development at the beginning of the project and the final social forms that were deployed in the support therefore took place. This encounter between forms of development was possible thanks to the position characterizing the support approach. The listening and monitoring position made it possible to locate the support in the potential zone of proximal development (Vygotsky 1985), i.e. to ensure that teachers are faced with tasks that, while new to them, could be successful in collaboration with support staff. The work and productions of the support staff were valued throughout the support process. The objective of developing the application was both defined and open, since the criterion was that the application should be adapted to its future users' ways of working. This position supported teachers in their attribution of meaning to these new forms of development.

The support process is also characterized by productive and constructive activities to put into words the elements of the training that have been perceived positively by respondents as having played a decisive role in their professional development. Concerning the use of words, ALOES is presented in the form of fields to be completed that correspond to key elements of the pedagogical activity. Filling in these fields requires the teacher to explicitly formulate his or her pedagogical experience, dividing it up (according to the fields) and reordering it to give shape to it (in the "Pedagogical situations" field). The contribution of ALOES lies in the framework given to the division and reorganization of the experience (Loisy 2018c).

As we have pointed out (in section 7.4.4.1), it would appear that there are two different support roles in the DevSup research:

– a role is played by the head of the master's who embodies the ideal form of development to strive for; they are a leader who brings the first model lesson plan to the basis of ALOES, and who develops ideas relating to the pedagogical use of digital technology; they are a democratic leader who facilitates the discussion of their ideas with a close team they have formed, the "Master's office" (Loisy and Sanchez 2016);

– a role is played by the pedagogical engineer who supports the teaching team in achieving the objectives, jointly designs the ALOES application and is able to provide information about the different fields; they are a guide according to the defined position who collaborates with all the teachers involved in the master's so that they learn to use the ALOES application, and who, in so doing, develops a detailed understanding of the context and the elements that influence it; in contact with both the head of the master's whose ideas they adhere to, with the application's IT developers and with the research team, they are a central player in the design and redesign of ALOES from a DBR perspective.

7.5.2. *Limit of the proposed assistance*

A limitation has been noted in terms of methodological rigor. Indeed, the support for each teacher in the preparation of the elements allowing them to complete the fields related to their TU in ALOES was provided by one of the pedagogical engineers, in a one-to-one interview. However, none of this support was recorded. These methodological limits do not allow us to model all the pedagogical support implemented in DevSup.

In addition, the research interviews reveal that this educational engineer is perceived as having played an important role. One of the weaknesses of these results lies in the fact that the effects of the system as a whole cannot be dissociated from the effects of individual interactions with this educational engineer whose exact

content is not identified. In particular, it may have contributed to instilling new pedagogical practices outside of group activities.

To repeat an experiment of this type, a clearer research contract should be established with all the actors involved in the scientific approach set up. This contract would specify, in connection with the support position: the recognition of everyone's knowledge, teachers, support team and research team, in particular in the construction of a shared meaning; the definition of everyone's roles and collaboration modalities in relation to the dual objective of producing research and tools; the consideration of the unpredictability of the process and the final product, compensated by a precise definition of the duration and forms of the support, and the forms that the autonomy aimed for at the end of the support will take; and the renegotiation of the contract as the research progresses, according to the feelings of each person.

7.6. Conclusion

To conclude, there are currently three prospects for improvement: for improving the ALOES application, for research on the professional development of the actors involved and for improving the approach as a whole.

7.6.1. *Prospects for improving the ALOES application*

After the DevSup support period, the teaching team of the Information Architecture master's at ENS continued to use the ALOES application and to develop it regularly. Two limitations to the development of this research can be identified. The first limitation is in terms of deployment. Attempts to deploy ALOES in other training contexts have not been successful. The application is perceived as too complex to be easily introduced in a new environment where teachers would be questioned about their still emerging practices, for example, for some teachers starting their training.

The second limitation is from the point of view of the notion of competencies; it seems that the teaching team has moved towards the division into sub-skills of the competencies of the initial frame of reference. A detailed study of the master's latest competency framework would be necessary to understand whether or not there was really a drift towards too much cutting in sub-skills. It is indeed essential to draw attention to the fact that, in the PBA, the aim is to create situations that make it possible to use and regulate the competencies needed to deal with complex situations, not to develop micro behaviors that would lead to the loss of the overall coherence of the master's degree (Loisy *et al.* 2018).

The PBA, by collectively mobilizing teachers, people receiving support, and even students and representatives of the professions, offers the possibility of jointly constructing what is expected in professional situations, a consensual normative elaboration based on the analysis of activities mobilizing the expected competencies (Chauvigné 2018). Indeed, competence can be identified by the activity used by an individual to address a given task in a category of situations. However, describing the components of a competency is not the same as dividing the complex task into micro tasks to be fulfilled by micro behaviors. It is a question of:

– describing the operational invariants that are of the order of the knowledge to be mobilized, the rules of action that are the effective components, the inferences of the characteristics of the situation, the expectations of the effects of its actions (Coulet 2018);

– taking into account the fact that the entire competence is deployed simultaneously at three levels: the relationship to the task, the relationship to oneself and the relationship to others (Bulea-Bronckart and Bronckart 2005).

The AccEPT site (*Accompagner les équipes pédagogiques sur leurs terrains d'exercices*[1]) gathers theoretical resources developed to support teaching teams that engage in the PBA and the competency-based approach. Links could be systematically integrated between the ALOES items and the video clips explaining the different concepts.

7.6.2. *Research perspectives on the professional development*

The research aimed to lead the group of teachers to pursue their own professional learning and development once the training was completed. The results in terms of professional development show that they have profoundly transformed their pedagogical practices to serve student learning. The research focused on studying the support process for teachers who develop a training program and on its effects, and in doing so, the system of support for student learning set up by the teaching team of the master's degree in Information Architecture following the support of DevSup has not been the subject of a systematic study. Various complementary studies could also be conducted to try to understand whether teachers who have received DevSup support in turn provide support for other teachers in the same discipline (or another) or who have recently arrived in the same training/structure, and whether the practices developed in the training for which they have been supported are deployed when they set up new training.

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1 AccEPT: http://ife.ens-lyon.fr/ife/recherche/enseignement-superieur/accept.

A promising research perspective in the contemporary context of higher education is that of student learning support. The learning support implemented by the teaching team of the master's in Information Architecture following the DevSup support is characterized as follows. A range of digital artifacts is being set up to support students' learning (see Figure 7.5). These artifacts are intended to help students organize their learning, on the one hand, and to help them learn, on the other. As regards the organization of learning, for example, the competencies to be acquired at the end of the master's degree are disseminated from the beginning of the training, and the organization of teaching and evaluations is shared well in advance.

As far as the learning itself is concerned, the proposed assistance provides course content and materials for learning management. It also aims to support the appropriation processes of content, by introducing students to the possibilities offered by certain digital artifacts to reformulate content, implement an intersubjective approach, etc. It therefore seems that their support is similar to an "educational process… oriented… towards the individual-plus, which would allow students to capitalize more consciously and artistically on the cognitive resources made available" (Perkins 1995, p. 69), a process that Charlier (2014) brings closer to personal learning environments (Milligan *et al.* 2006). A study remains to be conducted on the possible development of autonomy in learning when students are immersed in such an environment. Indeed, during the research interview, the head of the master's reveals that the students have built their own environment in a digital space independent of the learning support environment set up by the teaching team.

7.6.3. *Prospects for improving the overall approach: support*

The training project is a cultural object at the crossroads of several worlds: the worlds of the different disciplines represented by the project's teacher–researchers, the world of the institution's own traditions, the institutional world which issues requests that question the ways of doing things, and the world of the students trained, for whom this project has been designed, described, implemented and evaluated.

It is also at the crossroads of the social world of higher education, represented here, on the one hand, by teachers who develop a program responding to local, national and perhaps international social demand, and, on the other hand, by those supporting them, among whom we find engineers and pedagogical advisors, and agents present in the various common university services, such as the Directorates of Information Systems and Digital Technology, whose objective is to promote the deployment of innovative practices and technical/technological innovations.

In DevSup research, the social world of support staff is our own. We have chosen to support teachers in the strictest sense of going where teachers want to go, at the same time as they do (Paul 2009). We seek to "have their objectives formulated", as well as the "means they wish to develop to achieve them". Support is then defined as an approach intended to enhance the value of the activity formulated by the individual, as well as an approach to joint activity and collective enhancement that engineers and pedagogical advisors must integrate, despite the differences between the organizational modalities and the knowledge of the higher education teachers and members of the services supporting this pedagogy: relationships to knowledge, the goals pursued, the nature of the knowledge implemented in the approach, the position vis-à-vis political and institutional governance. These worlds are therefore under constant pressure (Figure 7.6), but look to produce promising results (Loisy and Raze 2017).
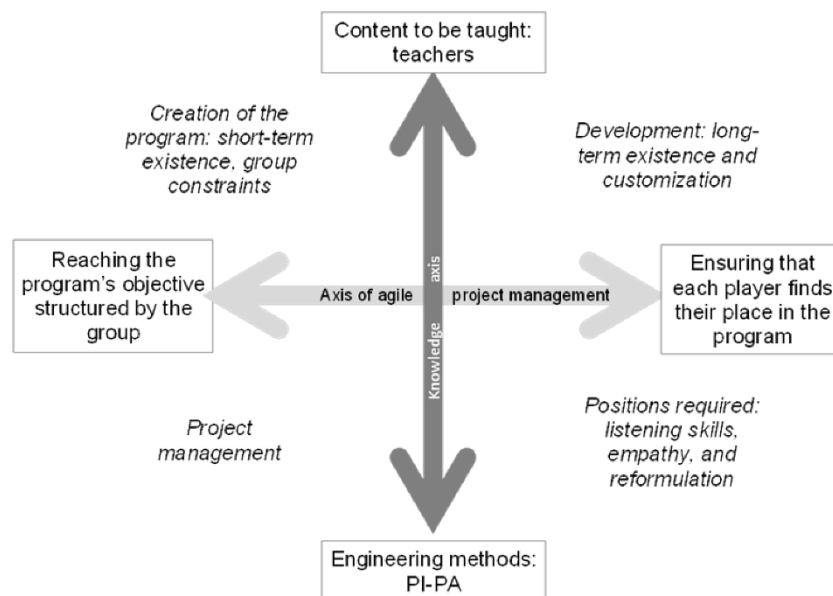

Figure 7.6. *Sources of conflict in support (Loisy and Raze 2017)*

7.7. References

Albero, B. (2014). La pédagogie à l'université entre numérisation et massification. Apports et risques d'une mutation. In *La pédagogie universitaire à l'heure du numérique. Questionnement et éclairage de la recherche*, Lameul, G., Loisy, C. (eds). De Boeck, Brussels.

Berthiaume, D., Rege Colet, N. (2013). *La pédagogie de l'enseignement supérieur : repères théoriques et applications pratiques*. Peter Lang, Bern.

Bulea-Bronckart, E., Bronckart, J.-P. (2005). Pour une approche dynamique des compétences langagières. In *Repenser l'enseignement des langues : comment identifier et exploiter les compétences?*, Bronckart, J.-P., Bulea-Bronckart, E., Pouliot, M. (eds). Presses du Septentrion, Lille.

Charlier, B. (2014). Les environnements personnels d'apprentissage: des instruments pour apprendre au-delà des frontières. *Sciences et Technologies de l'Information et de la Communication pour l'Éducation et la Formation (STICEF)*, 21, 211–237.

Chauvigné, C. (2018). A developmental perspective of competency assessment. In *Competence and Program-based Approach in Training*, Loisy, C., Coulet, J.-C. (eds). ISTE Ltd, London and John Wiley & Sons, New York.

Coulet, J.-C. (2018). Developing Competencies: Theoretical Detour in Favor of a Humanistic-based Competency Approach. In *Competence and Program-based Approach in Training*, Loisy, C., Coulet, J.-C. (eds). ISTE Ltd, London, and John Wiley & Sons, New York.

Dufour, C. (2007). L'évaluation continue de programme comme stratégie d'ajustement aux environnements disciplinaire et professionnel pour les écoles de bibliothéconomie et des sciences de l'information [Online]. In *35e Congrès annuel de l'Association canadienne des sciences de l'information. Partage de l'information dans un monde fragmenté: Franchir les frontières. Montreal*, May 10–12. Available at: http://www.cais-acsi.ca/ proceedings/2007/dufo ur_2007.pdf.

Éneau, J. (2005). Autonomie, réciprocité et développement organisationnel. De la construction des valeurs à la construction des identités. In *16e Conférence de l'AGRH*. AGRH, Paris, 15–16.

Faïta, D., Saujat, F. (2015). Le rapport dialogique en autoconfrontation comme cadre d'une activité médiatisante sur l'activité enseignante. In *Sixième séminaire pluridisciplinaire international Vygotski*. CIRCEFT-ESCOL et CRTS, Paris, 15-16 June.

Fave-Bonnet, M.-F. (2011). Formation pédagogique et développement professionnel des enseignants du supérieur. Le "cas" français. *Recherche et formation*, 68, 127–136.

Koehler, M.J., Mishra, P. (2009). What is technological pedagogical content knowledge? *Contemporary Issues in Technology and Teacher Education*, 9(1), 60–70.

Lameul, G. (2016). Postures et activité du sujet en formation : de l'intention au geste professionnel [Online]. *Revue internationale de pédagogie de l'enseignement supérieur*, 32(3). Available at: http://journals.openedition.org/ripes/1160.

Loisy, C. (2018a). Program-based approach in teacher development perspective. In *Competence and Program-based Approach in Training*, Loisy, C., Coulet, J.C. (eds). ISTE Ltd, London and John Wiley & Sons, New York.

Loisy, C. (2018b). La méthode trajectoire, instrument pour comprendre et soutenir le développement professionnel. In *Histoire, culture, développement : questions théoriques, recherches empiriques – Actes du VI séminaire international Vygotski*, Rochex, J.-Y., Joigneaux, C., Netter, J. (eds). Circeft-Escol/Cnam-CRTD, Paris, 441–454.

Loisy, C. (2018c). Le développement professionnel des enseignants à l'heure du numérique. Le cas du supérieur. Propositions théoriques et méthodologiques. HDR, École normale supérieure, Lyon.

Loisy, C., Raze, A. (2017). Accompagnement des équipes pédagogiques s'engageant dans une approche-programme. DevSup. Relever le défi de l'altérité [Online]. In *Actes du IXe colloque. Questions de pédagogie dans l'enseignement supérieur (QPES 2017), Relever les défis de l'altérité dans l'enseignement supérieur*. 91–99. Available at: http://www.colloque-pedagogie.org/sit es/default/files/colloque_2017/Actes_QPES_2017_Grenoble.pdf.

Loisy, C., Sanchez, E. (2016). Mettre en œuvre l'approche-programme en s'appuyant sur une application numérique: @LOES [Online]. *Revue Internationale de Pédagogie de l'Enseignement Supérieur (RIPES)*, 32(1). Available at: https://ripes.revues.org/1045.

Loisy, C., Sanchez, E., Decossin, M., *et al.* (2013). DevSup: médiatisations pour la construction collaborative d'un dispositif d'accompagnement pédagogique des enseignants du supérieur [Online]. In *Actes du colloque EPAL 2013, Échanger Pour apprendre en ligne*. Université Stendhal, Grenoble. Available at: http://epal.u-grenoble3.fr/dossier/06_act/actes2013.htm.

Loisy, C., Sanchez, E., Diakhaté, D. (2014). DevSup : évaluation de la mise en place d'un dispositif d'accompagnement à la mise en œuvre d'une approche-programme. Rapport de recherche. Lyon, IFÉ-ENS. Available at: http://eductice.ens-lyon.fr/EducTice/recherche/developpement-professionnel/devsup/Rapport-DevSup-2014.

Loisy, C., Van de Poël, J.-F., Verpoorten, D. (2017). Regards croisés sur deux dispositifs de formation technopédagogique et évaluation de leurs bénéfices. In *L'évaluation à la lumière des contextes et des disciplines*, Detroz, P., Crahay, M., Fagnant, A. (eds). De Boeck, Brussels, 275–304.

Loisy, C., Carosin, E., Coulet, J.-C. (2018). Benchmarks for operationalizing program-based and competency-based approaches in universities. In *Competence and Program-based Approach in Training*, Loisy, C., Coulet, J.-C. (eds). ISTE Ltd, London and John Wiley & Sons, New York.

Milligan, C.D., Beauvoir, P., Johnson, M.W., *et al.* (2006). Developing a reference model to describe the Personal Leaning Environment. In *Innovative approaches for learning and knowledge sharing*, Nedjl, W., Tochtermann, K. (eds). Springer-Verlag, Berlin-Heidelberg, 506–511.

Mishra, P., Koehler, M.J. (2006). Technological pedagogical content knowledge: A framework for teacher knowledge. *Teacher College Record*, 108(6), 1017–1054.

Paul, M. (2009). Accompagnement [Online]. *Recherche et formation*, 62. Available at: http://rechercheformation.revues.org/435.

Peeters, H., Charlier, P. (1999). Contributions à une théorie du dispositif. *Hermès, La Revue*, 25, 15–23.

Perkins, D. (1995). L'individu plus: une vision distribuée de la pensée et de l'apprentissage. *Revue française de pédagogie*, 111, 57–71.

Portelance, L., Martineau, S., Mukamurera, J. (2014). *Développement et persévérance professionnels dans l'enseignement*. Presses de l'Université du Québec, Quebec.

Prégent, R., Bernard, H., Kozanitis, A. (2009). *Enseigner à l'université dans une approche-programme*. Presses Internationales Polytechniques, Montreal.

Rabardel, P. (1995), *Les hommes et les technologies. Approche cognitive des instruments contemporains*. Armand Colin, Paris.

Samurçay, R., Rabardel, P. (2004). Modèles pour l'analyse de l'activité et des compétences, propositions. In *Recherches en didactique professionnelle*, Samurçay, R., Pastré, P. (eds). Octarès, Toulouse, 163–180.

Saujat, F. (2010). Travail, formation et développement des professionnels de l'éducation: voies de recherche en sciences de l'éducation. HDR, Aix-Marseille I, Université de Provence.

Shulman, L.S. (1987). Knowledge and teaching: Foundations of the new reform. *Harvard Educational Review*, 57(1), 1–22.

The Design-Based Research Collective (2003). Design-Based Research: An Emerging Paradigm for Educational Inquiry. *Educational Researcher*, 32(1), 5–8.

Vygotski, L.S. (1985). *Pensée et langage suivi de Commentaire sur les remarques critiques de Vygotski de Jean Piaget*. Messidor/Éditions sociales, Paris.

Vygotski, L.S. (1994). The problem of the environment. In *The Vygotsky Reader*, Van der Veer, R., Valsiner, J. (eds). Blackwell, Cambridge/Oxford, 338–354.

Vygotski, L.S. (2014). *Histoire du développement des fonctions psychiques supérieures*. La Dispute, Paris.

Wang, F., Hannafin, M.J. (2005). Design-based research and technology-enhanced learning environments. *Educational Technology Research and Development*, 53(4), 5–23.

8

Supporting Autonomy in a Higher Teaching Context

8.1. Introduction

This chapter questions the prescribed support of autonomy in a university context to help learners feel more effective in their learning. In particular, we focus on the task of designing mind maps, which is analyzed as a product capable of enhancing the qualities of an efficient learning environment, thought of by oneself and for oneself, through the representations that students can make of it.

The first part of the literature review introduces the different psychological variables that promote autonomy, and therefore success and effectiveness, in learning situations. We then formulate expectations in a problem in order to observe the indicators of the psychological state of students from what they produce in a design task. We then rely on two studies in an ordinary teaching situation, in order to implement this proposal to evaluate student productions, produced in the form of mind maps. In a discussion, we interpret the results of the two studies with regard to the advantage of using mind maps to perform the requested task, as well as the support that this task enables with regard to the collective and individual self-evaluation of the psychological variables involved. In the conclusion, we move towards a possible model of a modality for evaluating productions, suggesting that we could do without the measurement scales specific to these variables studied.

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8.2. State of the art

8.2.1. *Psychological variables for the development of autonomy*

Joint research into educational sciences and psychology reports a large number of studies that link certain psychological dimensions with the implementation of learning and self-regulation strategies for greater effectiveness and success. From a cognitive point of view, autonomy can be defined as a set of processes supporting awareness based on the judgment of the effectiveness of the result of a task (Mailles-Viard Metz 2015). In other words, it is a reflective process of taking a step back from your choices by integrating the consequences of your actions. In a pedagogical framework that defines autonomy as the transition from teaching to learning, Holec (1991) describes self-directed learning as a set of acts, behaviors, choices and organizations that include an objective, content, modalities of achievement and modalities of evaluation:

> Learner autonomy implies that the learner must actively take charge of everything that constitutes learning, i.e. its definition, management and evaluation, as well as its implementation. To do this, he must know how to learn. (Holec 1991, p. 5)

In this sense, and with reference to the theory developed by Zimmerman (2002), we have chosen to focus on three psychological components involved in the self-regulation cycle: motivation and feelings of effectiveness (anticipation phase), and the learning strategies put in place (action phase).

8.2.1.1. *Motivation*

According to the theory of self-determination (Vallerand and Blanchard 1998; Ryan and Deci 2000), three main types of motivation can be distinguished according to the goals and reasons behind the action:

– intrinsic motivation refers to the act of performing an activity for itself, the interest and the pleasure it arouses, and the satisfaction it provides; it is the most self-determined form;

– extrinsic motivation refers to the activity carried out for instrumental reasons, depending on the consequences or results with which it is associated;

– amotivation is the absence of intrinsic or extrinsic motivation; there are no perceived links between the achievement itself and the achievement of results related to an activity, and therefore there is no perception of control by the individual.

The value of the activity therefore lies in the intention to act and the perception of the links that guide action and generate meaning for the individual. Numerous

studies confirm that the most self-determined forms of motivation promote the acquisition, the transfer of knowledge and skills, a sense of competence, a perception of the usefulness of training, adaptation to the academic context, and the quality of learning and student concentration, satisfaction and well-being (Deci *et al*. 1991; Vallerand *et al*. 1997; Colquitt *et al*. 2000).

Ryan and Deci (2000) clearly establish that appropriate pedagogical activities (optimal level of difficulty/requirement, objectives, modalities and assessments that make sense to learners) will tend to generate intrinsic motivation. Self-determination is also promoted by pedagogical environments that instrumentally support the development of one's own resources, thereby reinforcing students' feelings of competence, autonomy, freedom and choice.

It can then be seen that these forms of motivation are associated with better performance, better success, and continued training or intentions to pursue further studies (Deci *et al*. 1991; Vallerand *et al*. 1997; Close and Solberg 2008; Vallerand and Lalande 2011).

8.2.1.2. *Feelings of self- and collective efficacy (SE/CE)*

The feeling of self-efficacy (SE) is defined by Bandura (1997) as an individual's belief in their ability to perform a behavior or to successfully perform an activity in a particular field. Self-efficacy refers to a belief and is not necessarily related to an individual's actual abilities or skills. In addition, perceived efficacy is related to specific and well-defined areas of activity and sets of tasks. Transposing SE to the group level gives the feeling of collective efficacy (CE), which is translated as "a belief shared by group members in their ability to collaborate to organize and carry out the actions required to achieve a desired result" (Bandura 1997, p. 477).

It is customary, according to Bandura's recommendations, to try to measure these different feelings in a very contextual way, using several scales by dimensions to obtain perception scores at a given time.

Several studies, conducted with different audiences, show that strong SE/CE (with respect to training or learning) promotes the use of effective problem-solving strategies, investment in learning activities and general commitment to the training project (Bandura and Locke 2003; Brown *et al.* 2008; Boudrenghien and Frenay 2011; Cosnefroy and Jézégou 2013). Beliefs of effectiveness also predict the intention to persevere and the effective retention of those in training, as well as the performance and success of students (Torres and Solberg 2001; Vonthron *et al.* 2007; Brown *et al.* 2008; Close and Solberg 2008). Conversely, feelings of effectiveness protect learners from physical and psychological distress that may result in anxiety or discomfort (Torres and Solberg 2001; Close and Solberg 2008). In other words, beliefs of self- and collective efficacy (according to the modalities) play a major role in the

training path; this explains the focus of much research on this object of study and the implementation of field systems that aim to strengthen them.

Conversely, regardless of the source of information considered (previous and vicarious experiences or verbal persuasion), if learners perceive their abilities as skills, which can be developed and improved through the acquisition of knowledge and practical experience, they will be better able to increase their feelings of effectiveness (Bandura 1997). Hence, the importance of socio-pedagogical environments that support students in mastering knowledge/skills, support the perception of their progressive acquisition, allow them to experience situations of success (rather than failure) through the achievement of intermediate objectives, highlight their progress, develop their sense of control over their environment and encourage students to consider themselves as being at the source of the results/consequences of their behaviors (internal causal attributions).

8.2.1.3. *Learning strategies*

Several studies show that the use of appropriate learning strategies promotes student learning, performance and success (Boulet *et al.* 1996; Viau 2009). From this perspective, students with a wide range of knowledge of learning strategies and their usefulness are considered better prepared to deal with a wide variety of learning situations (Boulet *et al.* 1996). Indeed, according to Romainville (2000b), the effective learner knows in which context and under which conditions a particular strategy should be applied. As a result, the most successful university students are those who have developed a wide range of strategies and who have knowledge of their relative effectiveness. They are therefore able to adopt the learning behaviors most appropriate to the requirements of the context (Romainville 2000b). Conversely, students' lack of reflection on their strategies is reported to be one of the consequences of academic failure (Boulet *et al.* 1996). Research on this subject shows that students are not sufficiently equipped to learn.

In their work, Larue and Hrimech (2009) analyzed different definitions, objectives and characteristics attributed to learning strategies (LS) through the results of previous studies (Romano 1991; Boulet *et al.* 1996; Fayol and Monteil 1996; Frenay *et al.* 1998; Weinstein and Hume 1998; Hrimech 2000) and proposed to group the LS into four categories:

– cognitive strategies (C);

– metacognitive strategies (M);

– affective strategies (A);

– management strategies (MG).

We use this categorization to identify the thoughts and behaviors of learners that significantly guide them towards academic success, using procedures and actions that are conscious, intentional, flexible and oriented.

This first part of the investigation shows the interest of taking these psychological variables into account in the implementation of learning. It should be noted that it is common practice in many empirical studies to measure these variables on scales validated by the completion of questionnaires (often dense in items, especially if several dimensions are measured) with students, and this at one or more moments of an experiment according to the analyses considered. However, while these practices provide statistical scores and results to validate and refute hypotheses, they generally raise questions in discussion and criticism of them. Indeed, within the framework of an experimental protocol applied to a pedagogical scenario, these measures add a significant cognitive load to learners. Results can sometimes be biased by a multitude of unexpected external variables (e.g. random or median filling, factors external to the situation or context, emotional and physiological dimensions), and yet we observe them in a scientific way. These difficulties invite us to think about complementary ways in which to measure the presence of these variables, without being too intrusive for individuals in learning situations.

8.2.2. *Representation and design products*

From the point of view of the factors guiding the development and deployment of learning strategies, experiments have been carried out to try to trigger awareness of the strategies implemented with the hypothesis that it would make them more effective. In their study on the implementation of a cognitive efficacy workshop through the design of a logbook, Ruph *et al.* (1998) conclude that it would be necessary to reflect on an environment owned by the student in which he or she could identify their strategies and give himself or herself the means to make them more effective throughout their university career. The personal learning environment (PLE), with its digital, interactive and customizable dimension, could meet this need.

In general, according to Romainville (2000b), peer observation, learner confrontation, and teacher incentives and support can encourage students to test new strategies (to broaden their range and assess their effectiveness). The student's conception of learning, and their relationship with the knowledge and subject studied, also plays a major role in the choice and implementation of strategies (Romainville 2000a). According to Viau (2009), they also depend on students' prior knowledge and motivation. Finally, proposing relatively complex and meaningful pedagogical activities involve deliberate choices (control) on the part of learners and, at some point in the learning process, lead to a conceptualization of one's actions

(such as those associated with the PLE), as well as promote the development of appropriate strategies (Romainville 2000b).

8.2.2.1. *The personal learning environment (PLE)*

Research into the PLE takes the view that the environment must help the learner to take control and manage their own learning in terms of content and process, while providing support to enable learners to master this management, define and achieve their goals and communicate with others throughout life (Van Harmelen 2006; Attwell 2007; Wild *et al.* 2008). For Wilson *et al.* (2007), the PLE allows many cognitive activities to be performed, with the tools allowing the learner to:

– learn with others (manage relationships with tutors, peers, create formal or informal relationships);

– control their resources (structure, share and annotate your own or others);

– manage the activities in which they participate or create (working groups);

– adapt their learning (give them the opportunity to connect what has been learned/acquired here and elsewhere, formally or informally).

However, the personal dimension of the PLE involves the learner taking a step back from their practices to identify their needs and the activities they think about pursuing through the use of this environment. The design process of the PLE therefore supports a reflective practice on the activity conducted (Schön 1993). By reflecting on their environment, the learner is the designer and user of this environment (Norman 1999). It allows the learner to structure what they need to learn, and also, from the visualization of the product of their reflections, the learner becomes engaged in a process of evaluation and change, if necessary, of their practices. This conception sets in motion a process of instrumental genesis that helps them in their practice (Rabardel 1995; Trouche 2005). By developing their own workspace, the learner increases their autonomy and self-regulatory capacities, gaining increased control over their learning (Mailles-Viard Metz *et al*. 2014).

8.2.2.2. *Mind maps as an individual or collective representation of thought*

While the PLE is a digital environment that can support the process of autonomy, its representation can be done in the form of a mind map. The concept of mind mapping is not new (Buzan 1974). The map is a diagram that semantically links ideas and concepts. It is composed of branches connected to a central node. Each branch corresponds to an idea and an element of thought (Noël-Lemaître and Chemangui 2008). The mind map is also contextual and depends on the problem at hand. It can thus act as a photograph of thought, corresponding to the mental representation that the individual has of the situation. It should be recalled that in

cognitive psychology, mental representation is a detailed construction: it is not static but evolving according to the context and parameters to be managed at the time of its creation (Richard *et al.* 1991). From a cognitive point of view, this type of representation can therefore help to conduct a reflective activity and thus to self-assess how the individual perceives the problem he or she is facing. The mind map therefore seems appropriate to us to support the student in an individual or collective way in their process of designing a PLE.

In the continuation of the work carried out by Mailles-Viard Metz *et al.* (2014), we would like to use a reading grid that helps to verify that the various aspects relating to psychological variables are indeed applied through a representation with a pedagogical aim, from the point of view of teachers, and with a projective aim, from the point of view of learners. If the mind maps of an ideal PLE can identify indicators that support motivation, sense of effectiveness and learning strategies, then a more qualitative view of possible effects is obtained a posteriori.

8.3. Question and methodology

In light of the work presented above, we observed student productions produced in a context of joint work. The objective was to verify that:

– this type of task supports the reflexive work of analyzing one's own conduct and setting objectives;

– production as such is a means of identifying states of personal and/or collective reflection, and that it is not necessarily essential to use measurement scales.

More precisely, we hypothesized that the design of mind maps by students is a means of verifying these two expectations, as well as of recommending pedagogical scenarios that "help" raise awareness of these variables as levers of learning. The psychological variables that we wanted to analyze through these productions were motivation, SE, CE and learning strategies.

We chose to carry out an in-depth qualitative analysis of the characteristics of the models produced by four student school years. In this way, we considered these models to be external representations of individual and/or collective thinking about the elements needed to become autonomous or to maintain a certain autonomy in university learning. They were products of the students' reflection within the framework of a collective work activity.

The analysis of productions was guided by the observation of indicators that informed us of the interest that students had in the conduct/presence of certain psychological activities to be autonomous in their learning. These indicators were

reported in a production reading grid. They link the psychological variables (i.e. M, SE/CE, LS, C, M, A, MG) with specific objectives (e.g. memorization, selection, note-taking), functionalities of tools supporting the activity (e.g. communication, visualization of progress, sharing), types of tools (e.g. LMS, text editor, agenda) and examples to identify indicators that support students' awareness.

From the point of view of psychological variables, we could identify:

– LS, which include four dimensions (cognitive, metacognitive, affective, management) and 11 indicators;

– self-regulation through SE/CE factors that are divided into eight indicators;

– motivation, which is reflected in the support of intrinsic or extrinsic own resources.

The collection of productions for this qualitative analysis was carried out on two sets of learners from different backgrounds, but all of whom were university students: three Master's 2 classes in digital humanities (from 2016 to 2018) and one class of students enrolled in the first year of an information technology degree (2019).

In order to jointly study the data from the two studies, we divided the analyses into two stages. The first part of the analysis identified the number of headings, topics, depth levels and links for all productions, examining those that stand out from a qualitative point of view. This allowed us to observe the nature and complexity of productions varying from one individual to another or from one group to another. A second part noted the presence of the different psychological variables according to the indicators supporting the students' awareness of or interest in them. For each map, we counted whether or not the variables (M, SE/CE, LS) identified by their indicators made it possible to say whether individuals had shown a particular interest in them. This produced a percentage that presented the elements of each variable for each map, for which we established an overall average per study to examine more specifically the qualitative aspects of these variables. These two stages allowed us to explore possible answers regarding our two expectations from a quantitative and qualitative point of view, using the content analysis method, and without the need for questionnaires.

8.4. Two studies based on a pedagogical scenario for designing a PLE using mind maps

8.4.1. *Study 1: individual design following joint learning*

8.4.1.1. *Population*

A total of 42 students who were enrolled in the first year of a university technology program specializing in computer science participated in the production

of the mind maps analyzed in this study. This was a period at the beginning of the academic year, when they were getting to know each other and work individually and collectively. They were all enrolled in initial training and left one or two years after a course at the secondary level (high school). In terms of instrumentation and digital literacy (Bourdeloie 2012), they had a good knowledge of computer technologies and could find, independently or through exchange with others, tools or materials adapted to the specific needs of teachers (e.g. presentations, videos, activities, tables, mind maps).

8.4.1.2. *Context and task*

The student productions were the result of a specific pedagogical scenario developed in a course entitled "Learning to Learn". The first step was to study, in groups, concepts related to learning, including the different psychological strategies and variables to better regulate learning. In the second step, and following the expected integration of the notions previously worked in groups, students were asked to design their own representation of a PLE, i.e. a digital environment that would be likely to help them in their learning. It is these productions in the form of mind maps that are the subject of the analysis of this study.

The task studied here therefore concerns the individual design exercise of a mind map of an ideal PLE. The students were asked to produce a mind map aimed at:

– designing their representation of a PLE;

– describing the tools that help support autonomy in learning, i.e. the variables related to this objective of being autonomous.

8.4.1.3. *Analyses*

Of a total population of 77 students from the three classes, only 42 mind map productions were selected and analyzed. The 35 productions not studied were excluded because they were either off-topic or not in the prescribed form (standard mind map).

Figure 8.1 presents the descriptive details of the data collected. Starting from the central node, the productions, resulting from collective reflection work, extend over an average of 4.36 main and very diverse headings. Some individuals deployed their representation of their PLE according to action verbs corresponding to activities (e.g. being informed, organized, revised, exchanged); others by spatialities (e.g. IUT, library, room); a large majority by type of physical or digital tools (e.g. computer, telephone, paper or Internet sites, social networks) or type of documents (courses, exercises, word processing, programming). These branches then generally extended over a maximum of two to four levels of depth, presenting maps that could be read as a whole, without having to expand the perspective to go into

detail. With a few exceptions, the general shape of the mind maps was therefore relatively homogeneous from one production to another. What then made the complexity of mind maps vary significantly was the total number of subjects (items) whose inter-individual variability was greater. On average, we observed a total of 16.95 items. The maximum number of items recorded on a production was 45 with two main branches (IUT, personal learning). Few studies report the links between different items (without going through the branches again). No production mentioned visual elements (images, symbols) to represent subjects, but they were essentially textual mind maps.
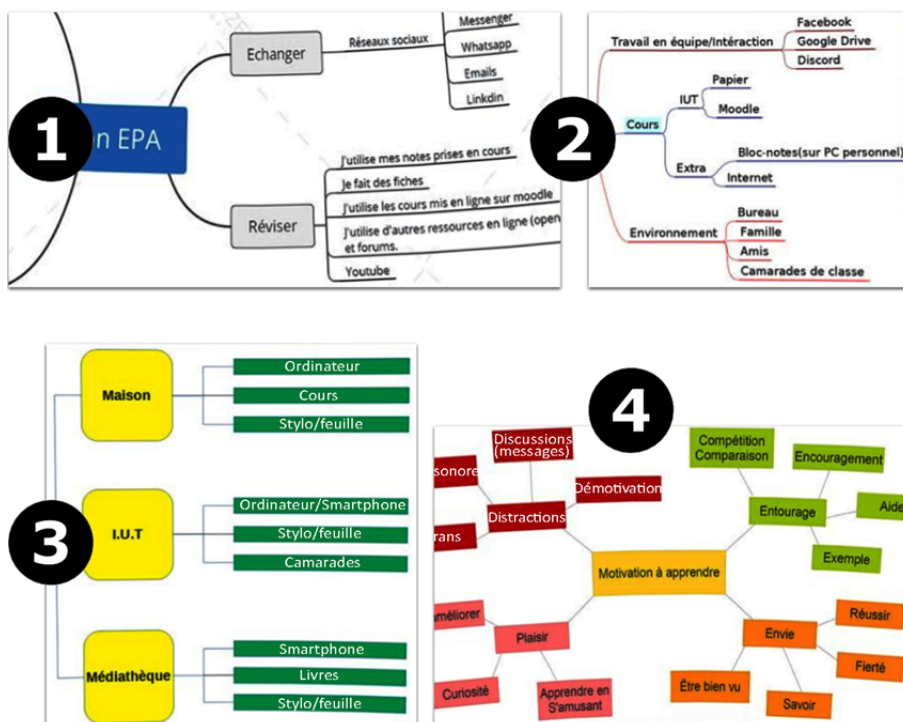

Figure 8.1. *Examples (1–4) of mind maps representing the structure of an ideal PLE for computer science students, For a color version of the figure, see www.iste.co.uk/pelissier/education.zip*

At the same time, these mind maps demonstrate a link between the psychological variables and their indicators that we found in the analysis of the maps. For example, some students explicitly named variables, such as motivation (Figure 8.1, no. 4), or some indicators related to concepts presented earlier in the course and located in their environment (i.e. organizational, revision activities). We identified all the

explicit indicators of production corresponding to the three variables. Approximately 10% of the maps had motivation elements, 31% SE/CE and 42% learning strategies as a whole.

The overall vision of all the productions shows more or less balanced distribution models according to each dimension. As a result, there was a relatively low presence of indicators corresponding to motivation (10%), but when expressed, it could be a central subject (Figure 8.1, no. 4) or the most self-determined form, intrinsic motivation ("curiosity, thirst for knowledge"; "satisfaction with understanding, gives desire to know more, greater focus"). Indicators related to the dimensions and factors of SE/CE (31%) demonstrated disparities in the different factors. For example, very few maps had branches concerning the identification of intermediate and final objectives and the perception of progressive acquisition. Vicarious experiences such as modeling and social comparison were more prevalent, which were interpreted by the presence of social networks and their use within their ideal PLE. As for learning strategies, the least represented dimensions concerned indicators related to metacognitive strategies (18%). Few maps seemed to show an awareness of strategies for evaluating, planning, controlling or regulating learning. Management strategies (86%), concerning elements related to time, human and material resources, were significantly represented, in particular through specific tools or functionalities corresponding to these aspects (calendar, computer peripherals, software, services, social networks, personal or collaborative work).

8.4.2. *Study 2: co-design following individual learning*

8.4.2.1. *Population*

A total of 23 students from three classes (2016–2018) of the Master's 2 in digital humanities participated in the production of the mind maps analyzed in this study. They followed distance learning, from all ages and backgrounds, some of them were returning to school and a large majority had professional experience (past or current). The purpose of this training was to guide students towards courses in digital mediation and pedagogical engineering. These specializations did not necessarily imply a command of computer tools. This course was held in the third semester and took place in groups of two to three collaborators composed spontaneously by the students themselves and in a mixed manner.

8.4.2.2. *Context and task*

The productions produced were the result of a pedagogical scenario developed in the course entitled "Pedagogy and Instrumentation". First, it was a question of studying, individually, the different course materials that allowed the student to appropriate the different notions of instrumented support in the context of

autonomous learning: psychological processes; implementation contexts; the process of appropriating the tool (instrumental genesis); communication, sharing, production and task management tools; or even the traces of activity to better personalize the environment.

Second, students in each group were asked to do the following:

– design a representation of a PLE;

– describe the scenarios for use that help to support the different psychological variables that in turn support autonomy in learning.

The mind map was not prescribed by the instructions, and the organization was left to the students' choice. However, the productions analyzed in this study were all derived from productions that used the mind map format.

8.4.2.3. *Analyses*

Of the three classes of students who participated in this course and produced a mind map as part of the design of a PLE model, seven out of 11 productions were selected for the year 2016; three out of eight for the year 2017; and zero out of five for the year 2018. The number of maps meeting the criteria for analyzing these productions according to our observable indicators, i.e. in relation to the various variables to be supported, was 10.

Figure 8.2 presents the descriptive details of the data collected. Starting from the central node, the productions extended over an average of 5.1 main headings. The main branches that structured mind maps were deployed according to pathway logics and usage scenarios. There are similarities in the deployment of branches based on spatial metaphor (Figure 8.2, no. 2); learning needs (Figure 8.2, no. 3; for example, communication, planning, cutting) or more pedagogical, professional or personal elements (e.g. specific learning, collaboration, careers).

The average depth level of the maps was 4, but the average number of items 44.4, which tends to indicate an average number of items per branch that was higher, with denser and harder to read maps at the first level of perspective. The maximum number of items recorded was 94, including visuals. More than half of the productions included visual elements in the structures of their maps, and nearly half also presented links between branches and items, creating connections, paths or multidimensional articulations. The maximum number of links recorded on a map was 38 for 48 items divided into four main branches, thereby creating a logical network between the different dimensions of the PLE representation.
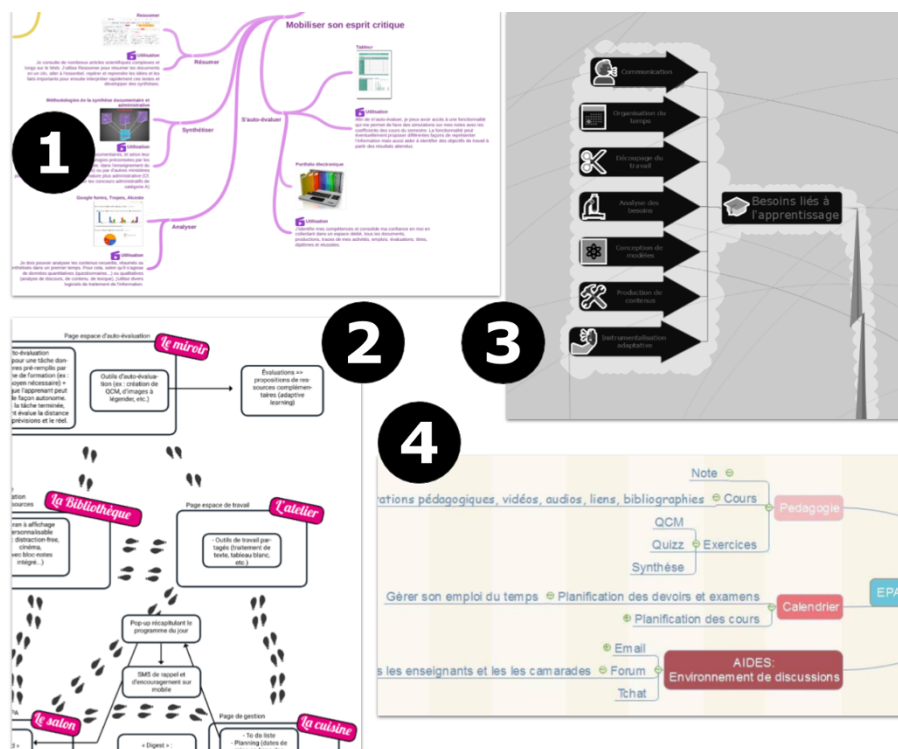
Figure 8.2. *Examples (1–4) of mind maps representing the structure of an ideal PLE for digital humanities master's students, For a color version of the figure, see www.iste.co.uk/pelissier/education.zip*

The identification of all the production indicators corresponding to our three variables allows us to confirm that there is indeed a link that can be measured by the qualitative analysis of the map content. Nearly 20% of the maps contained elements relating to motivation, 55% for SE/CE and 75% for learning strategies as a whole.

Overall, these 10 productions show a more balanced distribution of indicators for each variable and dimension represented. Indicators for identifying the elements of motivational support were always weakly expressed (20%, or two out of 10 productions referring to them in PLE representations). In terms of indicators related to SE/CE (55%), half of them were present in the majority of productions. There was little evidence of indicators that could raise awareness of the importance of breaking down objectives into intermediate and final objectives. The indicators that could be correlated with support for the perception of progressive acquisition are better represented, for example with the spatial metaphor of the "mirror" allowing

self-evaluation using criteria guided by both the training objectives and the criteria set autonomously to give the learner the possibility of evaluating the distance between the forecasts and reality (Figure 8.2, no. 1).

The dimensions of learning strategies appeared throughout all maps through the indicators that allowed them to be identified. Emotional strategies were the least represented (40%) even if the four maps that referred to them developed concepts around the quality of the sound environment, workload simulation, a system of personal achievement and trophies, or the implementation of "kudos" in the customization of the PLE. In this sample, cognitive (82%), metacognitive (70%) and management (100%) strategies were explored in depth in most aspects, demonstrating functionalities or examples that support selection (e.g. curation, collaborative writing, storage, sharing), organization (timing, planning, task management, project methodologies), development and revision, and the evaluation, planning, control and regulation of learning.

8.5. Results of the two studies

In a transdisciplinary way, these two studies allow us to put forward elements of answers concerning our problem. First, the type of task supported the expected reflexive work, whether it was an individual or collaborative production modality through collective learning, for which we observed an analysis of conduct in relation to identified psychological variables. Second, production as such seemed to be an effective means of identifying states of reflection, which could be interpreted by quantitative and qualitative content analysis. These results invite us to question what illustrates the implementation of the different variables by students in their learning and what they could take more into account to improve their perception of learning, as well as the need for a methodology to evaluate and empower self-evaluation in the development of autonomy.

8.6. Discussion

Our two uncontrolled experiments have given us the opportunity to study productions from two different population types: one in the first year of higher education and the other in the fifth year. It is obvious that it is not a question of comparing productions on the basis of their possible performance or evaluation, but rather of observing indicators linked to psychological variables. The results suggest that the productions of more advanced students could be a model for first-year students. Indeed, it can be seen from the quantitative and qualitative survey that the productions are more successful and developed among master students. The comparative differential of the indicators therefore allows us to extract the qualities

and defects that must be improved in the students, as in the scenario that gives us the means to integrate the importance of each of the variables.

8.6.1. *The mind map, support for representativeness*

The diversity of productions shows that this type of collective and instrumented activity is adapted to a diversified population (i.e. intra-individual variability: difference between first and fifth years of higher education; inter-individual variability: difference between all). The mind map thus makes it possible to represent the complexity of a PLE by more or less explicitly integrating the various identified psychological variables. The maps are observed and can generally be analyzed according to a structure starting from a central node and deployed in main headings and then in items, which facilitates a normalization of the reading.

Variability in terms of visual representation in the final production of the environment to be designed depends on the number of main topics. These headings give an idea of the general categorization of the elements of a PLE, without necessarily following the order or hierarchy of the psychological variables we have sought to observe. The number of depth levels, as well as the total number of items deployed in them, causes complexity and difficulty in reading without having to navigate from general to particular in the maps. In the case of the productions that we analyzed, the quantity of items and depth levels shows a greater representation of the indicators, suggesting that students have taken these dimensions into account in their PLE design. Another element, which is little used but significant when it has been used, is the presence and number of links visually represented between several headings or items. These links seem to show that beyond the deployment of ideas through axes in the design process, and feature articulations, multidisciplinarity, and an apparent intelligibility that emerges from the "whole" of representation. It thus appears that the task supports the reflective work in the structured and organized complexity of the standard mind map support.

8.6.2. *Towards the integration of regulatory and autonomy processes*

Analysis of the indicators used to identify a state of awareness of the various psychological variables shows that they are actually present in students' representations of a PLE. Let us also recall that our results come from two different training contexts and pedagogical scenarios, although they are similar in their purpose of production: the mind map of a PLE. Nevertheless, some elements seemed to emerge in a positive way when comparing the average percentages of representation of the different indicators related to the variables. It seems possible to quantify each dimension of the variables in order to estimate what is important or not in each

representation. The absence of some indicators does not mean that the concepts prepared in the course were not acquired or integrated, but only that they did not appear to be important in the design outcome of a PLE that was supposed to articulate all these dimensions together. It should also be noted that some indicators that we have associated with the identification of psychological variables may be simultaneously, directly or indirectly related to each other (factors of the feeling of effectiveness having an indirect effect on motivation, etc.).

In our sample, the analyses seem to indicate a weakness in representation around SE/CE, particularly in defining intermediate objectives, the final objective and supporting the perception of progressive acquisition. The point here is to deduce that these dimensions could be further developed in order to create an environment capable of regulating learning better. The motivation factors, i.e. the indicators that make it possible to support own resources for learning in the most self-determined way, appear to be few. However, the few examples showing that motivation was represented with a construction of meaning in the context of learning confirm that these ideas can emerge and spread using comparison as a pedagogical lever. In terms of learning strategies, if we consider that each dimension should be represented by each indicator that confirms a certain state of awareness, there would be a possible improvement in representativeness among all productions and school years. Management strategies in particular, which concerned the management of temporal, material and human resources, seemed to be the most acquired for these students who were familiar with a certain number of digital resources used as tools for this management.

The maps therefore generally demonstrate personal and collective reflection, but the integration of certain variables (motivation, SE/CE, metacognitive strategies) that may still be too abstract to be integrated into an ideal PLE needed to be improved. However, we know from the literature that all these factors in cohesion and harmony make it possible to increase success and performance, both in terms of individual and collective dimensions (Vallerand and Lalande 2011). It would therefore be desirable to be able to observe all the dimensions represented in the mind maps so that they are well integrated in the process of conceptualizing a certain distance applied to learning and its instrumentation.

8.7. Conclusion

These two studies allowed us to analyze the design product of mind maps that described a PLE in continuity with previous work (Mailles-Viard Metz *et al.* 2014) around pedagogical scenarios aimed at helping students "learn to learn". These results made it possible to psychometrically measure states at times *t* of the main variables, promoting success in learning and academic direction. However, while the

measurement scales of these states and variables provide clues at given times, they do not highlight the importance perceived by students of implementing adapted and instrumental behaviors.

As a result, using the reading grid of psychological variables to identify indicators through the production of mind maps, we conducted an analysis of the content of student productions. Our results support the idea that this grid is used to assess students' interest in some of the listed variables. We can put this interest into perspective by at least claiming that there has been a state or awareness through the exercise and in the design product of mind maps. Content analysis allows us to suggest that students have integrated the importance of these variables through their representation of them in an environment that aims to help them learn better.

One of the pedagogical objectives of this form of learning is to give students the means to be more autonomous by better evaluating the attitudes or instruments to be mobilized in their actions. A better knowledge of these self-regulatory strategies that leads to efficacy would also increase the ability to plan and orient oneself better in the long term. The idea of this grid is therefore to provide a tool for students and teachers to transfer the capacity for the evaluation of teaching to the self-evaluation of learning. In addition to strengthening the processes of learner autonomy, it would also make it possible to reduce the pedagogical scenarios of questionnaires or psychometric measurements by trying to measure their various effects, thus making it difficult to avoid the biases inherent in ordinary situations. Our contribution thus concerns recommendations whose objective is to support pedagogical (scenario, activity, modality), technical (digital tools, instrumentation) and psycho-cognitive (integration, regulation, evaluation) activities to instrumentalize all psychological elements and variables for acquiring essential learning processes.

It can then be seen that what is visibly better represented for some through ideas and topics that suggest the implementation of certain regulatory strategies and mechanisms could serve as a model for others through the design products and their form of measurable complexity. As these are lessons on learning in general, and learning to learn in particular, generalization in the form of recommendations based on the analyses could be beneficial to both students and the teachers who construct the pedagogical scenarios. Another time could then lead to a specialization of this pedagogical model towards more disciplinary variations or adaptations.

One perspective would be to transform all our analytical surveys into a "helping" scenario, inducing learners to adopt the "right" behaviors in the self-regulation of their learning, through this reflective work on processes and variables that support the implementation of a "self-evaluating" autonomy. Ultimately, it is a question of providing the means to instrumentalize variables linked to success factors through the objectives, content, implementation and evaluation methods that are vectors of

meaning construction for the learner. This new model, instrumented by digital platforms and a predefined pedagogical scenario on learning concepts, could be of general use to both teachers and students.

8.8. References

Attwell, G. (2007). Personal learning environments – the future of elearning? *eLearning Papers*, 2(1), 1–8.

Bandura, A. (1997). *Self-efficacy: The Exercise of Control*. W.H. Freeman & Co, New York.

Bandura, A. (2015). *Auto-efficacité : le sentiment d'efficacité personnelle. Ouvertures psychologiques*. De Boeck, Paris.

Bandura, A., Locke, E.A. (2003). Negative self-efficacy and goal effects revisited [Online]. *Journal of Applied Psychology*, 88(1), 87–99. Available at: https://psycnet.apa.org/doiLanding?doi=10.1037%2F0021-9010.88.1.87.

Boudrenghien, G., Frenay, M. (2011). La transition de l'enseignement secondaire vers l'enseignement supérieur : rôle des représentations et motivations à l'égard de son projet de formation [Online]. *L'orientation scolaire et professionnelle*, 40(2), 125–155. Available at: https://journals.openedition.org/osp/3073.

Boulet, A., Savoie-Zajc, L., and Chevrier, J. (ed.). (1996). *Les stratégies d'apprentissage à l'université*. PUQ, Paris.

Bourdeloie, H. (2012). L'appropriation des dispositifs d'écriture numérique : translittératie et capitaux culturel et social [Online]. *Études de communication*, 38, 23–36. Available at: https://journals.openedition.org/edc/3378.

Brown, S.D., Tramayne, S., Hoxha, D., Telander, K., Fan, X., and Lent, R.W. (ed.). (2008). Social cognitive predictors of college students' academic performance and persistence: A meta-analytic path analysis [Online]. *Journal of Vocational Behavior*, 72(3), 298–308. Available at: https://www.sciencedirect.com/science/article/abs/pii/S0001879107001182?via%3Dihub.

Buzan, T. (1974). *Use your head*. Book Club Associates, London.

Close, W., Solberg, S. (2008). Predicting achievement, distress, and retention among lower-income Latino youth [Online]. *Journal of Vocational Behavior*, 72(1), 31–42. Available at: https://www.sciencedirect.com/science/article/abs/pii/S0001879107000693?via%3Dihub.

Colquitt, J.A., LePine, J.A., and Noe, R.A. (ed.). (2000). Toward an integrative theory of training motivation: A meta-analytic path analysis of 20 years of research [Online]. *Journal of Applied Psychology*, 85(5), 678–707. Available at: https://psycnet.apa.org/doiLanding?doi=10.1037%2F0021-9010.85.5.678.

Cosnefroy, L., Jézégou, A. (2013). Les processus d'autorégulation collective et individuelle au cours d'un apprentissage par projet. *Revue internationale de pédagogie de l'enseignement supérieur*, 29(2), 1–21.

Deci, E.L., Vallerand, R.J., Pelletier, L.G., and Ryan, R.M. (1991). (ed.). Motivation and education: The self-determination perspective [Online]. *Educational Psychologist*, 26(3-4), 325–346. Available at: https://www.tandfonline. com/doi/abs/10.1080/00461520. 1991.9653137.

Fayol, M.M., Monteil, J.-M. (1994). Note de synthèse : Stratégies d'apprentissage/ apprentissage de stratégies. *Revue française de pédagogie*, 106, 91–110.

Frenay, M., Noël, B., Parmentier, P., and Romainville, M. (ed.). (1998). *L'étudiant-apprenant. Grille de lecture pour l'enseignant universitaire*. De Boeck Université, Brussels.

van Harmelen, M. (2006). Personal learning environments. In *Sixth IEEE International Conference on Advanced Learning Technologies (ICALT'06)*. IEEE, Kerkrade, 1–2.

Holec, H. (1991). Autonomie de l'apprenant : de l'enseignement à l'apprentissage. *Éducation permanente*, 107, 1–5.

Hrimech, M. (2000). Les stratégies d'apprentissage en contexte d'autoformation. In *L'autoformation de l'enseignement supérieur : apports européens et nord-américains pour l'an 2000*, Foucher, R., Hrimech, M. (eds). Les éditions nouvelles, Montreal, 99–111.

Larue, C., Hrimech, M. (2009). Analyse des stratégies d'apprentissage dans une méthode d'apprentissage par problèmes : le cas d'étudiantes en soins infirmiers. *Revue internationale de pédagogie de l'enseignement supérieur*, 25, 25–2.

Mailles-Viard Metz, S. (2015). *Autonomie et apprentissage universitaire : aides et outils*. ISTE Editions, London.

Mailles-Viard Metz, S., Vayre, É., and Pélissier, C. (ed.). (2014). Scénario pédagogique pour la réalisation d'une maquette d'EPA par des étudiants de 1re année de licence : une aide à l'autorégulation de l'apprentissage ? [Online]. *Sciences et technologies de l'information et de la communication pour l'éducation et la formation*, 21, 391–418. Available at: https://www.persee.fr/doc/stice_1764-7223_2014_num_21_1_1104.

Noël-Lemaître, C., Chemangui, M. (2008). Les cartes conceptuelles comme outil de représentation du rôle des auditeurs dans la fiabilité de l'information financière : une exploration des différences liées à l'expérience [Online]. *Systèmes d'information & management*, 13(2), 5–31. Available at: https://www. cairn.info/revue-systemes-d-information-et-management-2008-2-page-5.htm.

Norman, D.A. (1999). *The Invisible Computer: Why Good Products Can Fail, the Personal Computer Is So Complex, and Information Appliances Are the Solution*. MIT Press, Cambridge.

Rabardel, P. (1995). *Les hommes et les technologies ; approche cognitive des instruments contemporains*. Armand Colin, Paris.

Richard, J.-F., Fayol, M.M., and Lemaire, P. (ed.). (1991). Les activités mentales. Comprendre, raisonner, trouver des solutions. *Revue française de pédagogie*, 94, 119–121.

Romainville, M. (2000a). *L'échec dans l'université de masse*. L'Harmattan, Paris.

Romainville, M. (2000b). Savoir comment apprendre suffit-il à mieux apprendre ? In *Pour une pensée réflexive en éducation*, Pallascio, R., Lafortune, L. (eds). Presses de l'Université du Québec, Quebec, 71–85.

Romano, G. (1991). Étudier… En surface ou en profondeur ? *Pédagogie collégiale*, 5(2), 6–11.

Ruph, F., Gagnon, A., and La Ferté, P. (ed.). (1998). Ateliers d'efficience cognitive à l'université : un modèle métacognitif d'intervention. In *Métacognition et compétences réflexives*, Lafortune, L., Mongeau, P., Pallascio, R. (eds). Logiques, Montreal, 165–199.

Ryan, R.M., Deci, E.L. (2000). Intrinsic and extrinsic motivations: Classic definitions and new directions. *Contemporary Educational Psychology*, 25(1), 54–67.

Schön, D.A. (1993). *Le praticien réflexif, à la recherche du savoir caché dans l'agir professionnel*. Logiques, Montreal.

Torres, J.B., Solberg, V.S. (2001). Role of self-efficacy, stress, social integration, and family support in latino college student persistence and health [online]. *Journal of Vocational Behavior*, 59, 53–63. Available at: https://www.sciencedirect.com/science/article/abs/pii/S0001879100917858?via%3Dihub.

Trouche, L. (2005). Des artefacts aux instruments, une approche pour guider et intégrer les usages des outils de calcul dans l'enseignement des mathématiques. In *Actes de l'université d'été* "*Le calcul sous toutes ses formes*". 265–276.

Vallerand, R.J., Blanchard, C.M. (1998). Motivation et éducation permanente : Contributions du modèle hiérarchique de la motivation intrinsèque et extrinsèque. *Éducation permanente*, 136(3), 15–36.

Vallerand, R.J., Lalande, D.R. (2011). The MPIC model: The perspective of the hierarchical model of intrinsic and extrinsic motivation [Online]. *Psychological Inquiry*, 22(1), 45–51. Available at: https://www.tandfonline.com/doi/abs/10.1080/1047840X.2011.545366.

Vallerand, R.J., Fortier, M.S., and Guay, F. (ed.). (1997). Self-determination and persistence in a real-life setting toward a motivational model of high school dropout. *Journal of Personality and Social Psychology*, 72(5), 1161–1176.

Viau, R. (2009). *La motivation en contexte scolaire*. De Boeck, Brussels.

Vonthron, A.-M., Lagabrielle, C., and Pouchard, D. (ed.). (2007). Le maintien en formation professionnelle qualifiante : effets de déterminants motivationnels, cognitifs et sociaux [Online]. *L'orientation scolaire et professionnelle*, 36(3), 401–420. Available at: https://journals.openedition.org/osp/1481.

Weinstein, C.E., Hume, L.M. (1998). Study strategies for lifelong learning. Study strategies for lifelong learning [Online]. American Psychological Association, Washington. Available at: https://psycnet.apa.org/PsycBOOKS/toc/10296.

Wild, F., Mödritscher, F., and Sigurdarson, S. (ed.). (2008). Designing for change: mash-up personal learning environments. *e-Learning Papers*, 9, 1–15.

Wilson, S., Liber, O., Johnson, M., Beauvoir, P., Sharples, P., and Milligan, C. (ed.). (2007). Personal learning environments: Challenging the dominant design of educational systems. *Journal of e-Learning and Knowledge Society*, 3(2), 27–38.

Zimmerman, B.J. (2002). Efficacité personnelle et autorégulation des apprentissages durant les études : une vision cyclique. In *La formation autodirigée,* Carré, P., Moisan, A. (eds). L'Harmattan, Paris, 69–88.

PART 4

Types of Assistance in a
Pedagogical Context

9

Is Collaboration Between Librarians and Teachers Helpful for Students?

9.1. Introduction

In France, collaboration between library services and faculty is slowly evolving. A 2016 study showed that higher education tends to move "from a logic of compartmentalization to an integrative logic aimed at decompartmentalizing structures, spaces and practices" (Chalmel *et al.* 2016, p. 79). Still, few faculty members collaborate with information professionals to develop collections that support undergraduate curriculum.

In this context, it is difficult to create an instructional design that involves teachers and librarians working together to develop students' information skills. But contemporary information-seeking practices are also not helping since "almost all knowledge is accessible to every human being who can read and has a computer connected to the Internet, almost free of charge and almost all the time" (Tricot and Rafenomanjato 2017, p. 147): the academic task of seeking information has been profoundly changed by the almost immediate and widespread accessibility of information. Before the Internet, information-seeking was time-consuming and required to first clarify the information need before starting a search. But now the fact that everything is immediately accessible creates the dual illusion that it is possible to start a search without having properly identified the need for information, and that this search can be conducted without the support of a documentation specialist. In addition, e-learning curriculums have increased, facilitating active collaboration between librarians and faculty members (Landry-Hyde and Cantwell 2013): In addition,

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"embedded librarianship" has emerged, as a strategic model where the information professional provides specialized knowledge and expertise to students (Shumaker 2012).

In this chapter, we will examine, on the one hand, how a librarian, who is responsible for controlling scientific, technical and academic information, can collaborate on a course with a teacher who is a specialist in his or her field; on the other hand, we will question the nature of the assistance they can provide to students, and the use that students make of it. This chapter will answer some basic questions about embedded librarianship. How did embedded librarianship begin in faculty libraries? What is the specific role of an embedded librarian? We will then present an experimental embedded librarianship which took place in a "Digital Culture course" for two years with undergraduate students.

9.2. Literature review

9.2.1. *History of the embedded librarianship*

The literature on the embedded librarianship comes mainly from the United States. Unknown in France, this expression comes from the term embedded journalist, a phenomenon that originally consisted of "embedding" a journalist into various military operations during the invasion of Iraq by American troops (Dewey 2004, p. 6): embedded journalists were deployed among the troops to report on what they saw. In the same way, librarians are "embedded" in a course initially designed by a teacher. They are nevertheless fully engaged in the teaching process: they teach information skills, often in response to a specific information need (Landry-Hyde and Cantwell 2013 citing Dole and Kellam 2012, p. 31).

Embedded librarianship also originates from the field of health. In the early 1970s, Gertrude Lamb used clinical librarians as part of medical teams to provide information to physicians during their visits (Shahril and Fazli 2015 citing Eriksson *et al.* 2009).

9.2.2. *The specific role of embedded librarians in higher education*

Shumaker defines the embedded librarian as "an innovation that allows librarians to move out of libraries and create a new model of work and information" (Shumaker 2012, p. 4). Even though this definition does not specifically relate to higher education, it highlights the close collaboration between the librarian and a community in need of information. This socialization is key for the librarian to be able to understand the user's needs. Librarians are no longer a traditional stand-alone service provider but become a full member of the team. The librarian

cannot therefore be easily replaced, as they provide highly targeted, personalized and high value-added information thanks to his or her very good knowledge of the user's needs. Embedded library science goes beyond the traditional aims of the librarian who provides an answer or advice on research methods, as is the case in a traditional or virtual reference service, by telephone, e-mail or SMS. The embedded librarian in a university course or with commercial objectives as part of a market research study seeks to understand in detail the project and the user's final objective, and provides proactive results. This is because the librarian has a better knowledge and understanding of the work and objectives of the group in which they are fully integrated so that they are able to provide highly targeted and specialized research and information results. By going beyond the expectations of its users, the embedded librarian even contributes to the team's success (Riccio 2012; Shumaker 2012; Shahril and Fazli 2015).

As illustrated in Table 9.1, Shumaker (2012) identifies five fundamental differences that illustrate the role of a embedded librarian vs. a traditional librarian.

Traditional librarian	Embedded librarian
Ready to answer	Anticipates
Individual user	Collaborative team
Standard service model	Personalized service model
Individual transaction	Ongoing projects
Services provided	Partnership

Table 9.1. *Differences between the traditional librarian and the embedded librarian*

First of all, the traditional librarian waits for a request, while the embedded librarian identifies or even anticipates the needs and finds solutions.

Then, the traditional library addresses one user after another, while the integrated librarian mostly works with and for a team, which increases the reach of assistance. In addition, the standardized library model aims to ensure equal treatment among all users. However, as users may have different needs, the librarian response should also be different. An embedded librarian provides flexible and customized assistance.

The quality of traditional librarian service is only based on the number of responses provided. However, in the case of embedded librarianship, the work is still ongoing, and it is the librarian's added value for student learning outcomes or

team success that becomes the measurement indicator, not the number of responses formulated.

Finally, traditional library science is oriented towards the notion of service and is only responsible for that service. Embedded librarians transcend service as they become partners. As a partner, the librarian is fully engaged and a full member of a team whose participants are altogether committed to the overall result. In short, a new library model is emerging, based on a new image of competence and commitment.

In higher education, the social bonding between librarians and faculty colleagues is essential. As professional relationships develop, the librarian will naturally become a team member rather than remaining a traditional autonomous service provider (Shumaker 2012). The embedded librarian and faculty members will have common objectives and responsibilities. In the end, the embedded librarian will make a highly personalized and value-added contribution to the faculty community (Shahril and Fazli 2015).

However, in France, collaborations between librarians and faculty members remain too rare (Chalmel *et al*. 2016 citing Casaurang 2005). Information literacy training is either entrusted to teacher-researchers or delegated to library staff. Yet, faculty teachers see their role as a bridge between abundant documentary resources and first-year university students. They note that students need assistance to select documents (Epron 2013).

When integrated into online learning, librarians actively participate in online course management tools like discussion forums, users' guides, video-tutorials and other digital learning devices. They can even help teachers define the pedagogical scenario or build it themselves (Landry-Hyde and Cantwell 2013).

9.2.3. *Research question*

Our study addresses how the academic embedded librarian collaborates with his faculty colleague and how he helps students collecting information for their assignment. Our goal is to identify and list help types the librarian can provide when embedded in an instructional design.

9.3. Methods

9.3.1. *Natural experiment*

Our experiment was carried out two years in a row in a "Digital culture" course which focuses on information and media literacy. In the first year, a first group of 28

students (called "G1") worked with a librarian (called "B1"); the following year, another group of 21 students (called "G2") worked with another librarian (called "B2"). Both student groups were first year students.

In seven two-hour sessions, the objective was to develop students' digital culture knowledge and provide them with information skills, such as those defined in the information skills framework of the *Association des directeurs et personnels de direction des bibliothèques universitaires et de la documentation* (ADBU)[1]. It was about being able to:

   – identify an information need and define its nature and scope;

   – access the necessary information efficiently;

   – produce and communicate from its results;

   – critically evaluate the information obtained (sources, approach and results).

The first two sessions were devoted to the acquisition of informational skills, and the next five sessions were devoted to development by the production of a written assignment and oral presentation. Each student group had to focus on one aspect of the course, i.e. studying advertising strategies on social media, or analyzing the impact of IT on interpersonal relations.

The instructional design was a flipped classroom, as it was supposed to facilitate the introduction of the embedded librarianship model (Thobois Jacob and Chevry Pébayle 2018a, 2018b, 2019). In groups of three, students were asked to prepare an assignment were it was necessary for them to:

   – read a major source on the subject and elaborate a reading note;

   – write a summary of these three major sources by quoting them in the text.

A bibliography should also be compiled and presented according to the APA standards.

The written assignment, once validated by the teacher, was available for other students group to read. In accordance with the spirit of the flipped classroom, each group of students had to present their topic and design learning activities for their peers (debates, board games, posters, quizzes, etc.).

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1 https://adbu.fr/une-version-en-ligne-du-referentiel-de-competences-informationnelles/.

9.3.2. *Data sources*

Two semi-directed interviews were conducted with librarians B1 and B2.

G2 students' perspectives were surveyed using a questionnaire. Two questions, with a drop-down menu, invited students to assess the influence of the embedded librarianship on :

– their use of the library;

– the preparation of the academic work that the students were responsible for.

Then, four open-ended questions were asked on:

– the overall satisfaction of students with receiving help from the librarian;

– identification of the assistance provided by the librarian as they received it;

– the information skills on which the librarian's intervention had added value;

– students' thoughts, comments, suggestions for improvement or any specific elements they may or may not have liked about the integration of a librarian into the course.

9.4. Results

9.4.1. *The perspective of embedded librarians*

9.4.1.1. *Integration of librarians into courses*

The two experiments resulted in very similar actions by the two librarians, B1 and B2, as shown in Table 9.2. However, they did not consult each other on how to proceed because they intervened over different time periods (librarian B1 in 2017–2018 and B2 in 2018–2019). Neither of them was familiar with the embedded librarian system before participating.

Both librarians conducted preliminary research before receiving the students for an appointment. B1 produced bibliographies on Zotero based on the five themes that made up the course. B2 researched each theme, with the assistance of a colleague who found keywords for each topic and began to search for the most relevant databases through a search of the library's catalogue. B1 and B2 saw each student group only once.

In the case of G1, librarian B1 was physically present during the course during the first two sessions, which were devoted to the acquisition of information skills, and even took charge of the second session entirely in the presence of the teacher.

B1 was introduced as the contact person in addition to the teacher and had communicated his email in the first session. The librarian was asked to teach students information-seeking procedures as well as the criteria for the reliability of a source. B1 had access to the LMS page and could add resources to the course content. Both the teacher and librarian were involved in this type of collaboration for the first time in a course. The librarian had prepared bibliographies on Zotero based on the themes of the teacher's course plan. Thereafter, B1 would respond by email to students who had requested assistance, and he would receive students at the library during an appointment that lasted one hour on average. Three groups out of ten were given an appointment.

In the case of G2, the first session was held at the university library. During this first session, librarian B2 was introduced as the resource person in addition to the teacher. Although he was very involved in the course content, he could not take charge of a teaching session because of his very busy schedule.

However, he prepared the necessary material for the first session to allow students to sort through different types of documents (conference proceedings, dictionaries, collective works, etc.). B2 received requests for help by email and via Moodle.

While B1 had published personalized bibliographies for each group on Moodle, librarian B2 had published:

– a link to a self-study platform called "USPC Documentary Research", aimed at strengthening information skills through digital technology in order to be able to use databases in LSH (Cairn, Jstor, Scholarvox by Cyberlibris, Persée, Revues.org, MLA, etc.), health and science;

– a link to the procedure for accessing online resources available from the documentary portal for Strasbourg University libraries referring to reliable, relevant and university-level information;

– a bibliographic database entitled Business Source Premier, providing access to journals on marketing, management, information systems, production and operations management, finance, accounting and economics.

As shown in Table 9.2, six actions of the librarians included in the course were identified from the highest to the lowest level of integration.

Welcoming students during appointments and providing them with customized assistance was the most engaging action, while conducting research before meeting students was not very engaging as it was considered a minimum expectation from an information specialist.

Degree of integration	Actions taken by the librarian	B1	B2
5	Responded to the needs of the groups during an appointment in the library and strengthened training in information skills	Yes (3 groups out of 10)	Yes (4 groups out of 10)
4	Animated a teaching session	Yes	No
3	Designed the pedagogical scenario with the teacher	Yes	Yes
2	Prepared useful resources for the course	No	Yes
1	Published resources on Moodle	Yes (bibliographies on Zotero)	Yes (links to databases)
0	Conducted research before meeting the students	Yes	Yes

Table 9.2. *Typology of actions implemented by embedded librarians B1 and B2*

9.4.1.2. *After the experiment: Librarians' feedback*

Librarian B2 realized that the documentary research course he usually taught at the beginning of the year was only meaningful for students when they had an assignment to do. When the students came in for an appointment, they listened more carefully to his explanations than when they first saw him at the beginning of the year when they did not yet need to apply his advice to a specific learning task.

To the question "What do you think an embedded librarian is?" librarian B2 explained that "it is about introducing resources into a course. We are there as a form of support. I have a mediation role." The concept of the embedded librarian goes even further for B1. He considers the librarian as a tutor for students throughout their learning path and would go as far as helping them to find employment. B1 explained that he went out of his comfort zone by teaching courses with teachers outside the library and by engaging in new tasks, such as pedagogical innovation or the training of students in transversal skills. According to B1, cross-curricular competencies are about discovering the tools of the library and learning how to use a database or learning about digital culture, information culture, reliability of information, fake news, copyright, etc.

Librarian B1 had difficulty being responsive when he received the student's request for assistance. First, despite his desire to free up time for the digital literacy

course, it was impossible for him to attend the course due to a lack of time. He therefore chose to receive the students by appointment. Second, B2 was challenged by using Moodle which he had never used before. This difficulty was quickly overcome with the teacher's explanations so the librarian was able to post resources on Moodle. B2 also expressed his discomfort because the groups did not react although he had posted useful information on Moodle for them. He realized that the students and the teacher should have been informed of this upload.

Regarding the location of the course, librarian B2 thought "the fact that students came to the library was better. We have a nice library, we're getting down to business. They didn't feel like they were in class. We break the rules." The librarian had prepared about 30 documents of all types for each group, including dictionaries, conference proceedings, periodicals, collective works and so on, that students had to sort out.

Librarian B2 regretted that not all groups asked for help. "The four groups I saw were the ones already coming to the library. The question is how to help students who are not used to coming, get rid of the idea that 'I don't need help'."

9.4.2. *After the experiment: G2 students' feedback*

While the opinions of G1 students on the embedded librarian system were not collected, 21 students from the G2 group reported their feedback by answering the questionnaire published on Moodle with a return rate of 85%.

9.4.2.1. *Students' habits in the library*

Half of these 21 students often came to the library to do research to prepare their presentations, eight sometimes came and three almost never came. Almost half of the participants rarely or never sought the librarians' help for their work, a quarter of them did it sometimes and two students did it on a frequent basis. Only 4 out of the 21 students were aware of the online information service. Some 18 students out of the 21 reported that the information literacy course with the embedded librarian was their first information-seeking course. All students who received the librarian's assistance remembered the librarian's name.

9.4.2.2. *Students' perceived help from the librarian*

To the qualitative question "What main form of help did the librarian give you?" (Table 9.3), only one response per student was required out of 11 proposals. Of these, only five were chosen by the students. Of the 13 people who sought help, five believed that the librarian provided them with effective and efficient access to the information they needed to write their assignment. By efficiency, we mean the ability to find the optimal information. Three students reported that the librarian

helped them by providing them with reliable websites, portals and specialized search engines to find major sources on digital culture. These responses are to be considered from the perspective that the librarian helped them first and foremost in listening and in defining their research topic. Two students believed that the help provided by the librarian was primarily in assessing the reliability of information found on the Internet. By reliability, we mean credibility, accuracy, timeliness and provenance. The same number of students thought that the help mainly concerned information on the library's research tools to find major sources on digital culture. One student answered "other", considering that the satisfactory answer was not among the 11 proposals. Finally, as shown in Table 9.3, the proposals that were not ticked by any student are as follows:

– providing information on how to cite authors;

– providing ideas for pedagogical scenarios;

– giving advice for oral presentations;

– training to gain a command of digital tools (Netvibes, wikis, Scoop it, Zotero, Kahoot, Socrative, etc.).

Five students did not respond. Only 7 out of the 21 students noted that librarian B2 had posted resources on Moodle. This was due to the librarian's lack of communication with students and teachers and because there was no indication on Moodle of who was posting a resource.

Elements cited by students (n = 21)	Number
Access information effectively and efficiently	5
Indicate websites, portals and reliable specialized search engines	3
Listen and define the subject	3
Assess the reliability of information	2
Provide information on the library's research tools	2
Other	1
Provide information on how to cite authors	0
Provide ideas for pedagogical scenarios	0
Give advice for oral presentations	0
Train to master digital tools (Netvibes, wikis, Scoop it, Zotero, Kahoot, Socrative, etc.)	0
No answer to this question	5

Table 9.3. *"What was the main form of assistance provided by the librarian? (only one answer required)"*

Table 9.3 shows that the students considered the librarian to have mainly provided assistance in mastering information skills: enabling them access to information effectively and efficiently, providing assistance in identifying reliable websites, portals and search engines, and providing assistance in defining their subject.

9.4.2.3. *Student satisfaction with the librarian's assistance and their relationship with the librarian*

G2 students greatly appreciated the librarian's presence, as shown by some of the following statements: "I found (the integration of a librarian into the course) innovative and enriching" and "a librarian is a very good idea, we would need one for all courses". Eighteen out of the 21 students would recommend having a librarian in online, hybrid and face-to-face courses. One student did not answer the question, one would recommend to some degree and one not at all.

While 14 out of the 21 students were completely satisfied with the assistance, three students were satisfied to some degree and only one student was not at all satisfied with the assistance provided by the librarian, but did not explain his reasons. Approximately 17 out of the 21 students thought that the librarian was quite helpful in succeeding in the work required in the flipped classroom, two considered the librarian to be moderately helpful and one student felt that the embedded librarian was not helpful.

To the open-ended question (Table 9.4) "How would an integrated librarian add value to the courses?", half of the students believed that the librarian provided knowledge of relevant and reliable sources and almost a third believed that the librarian was the guarantor of the information-seeking methodology. The librarian ensured that the research path was chosen. Four students thought the librarian provided personalized assistance in addition to that of the teacher. One student pointed out that the presence of the librarian saved time and another student pointed to the contribution of a different approach.

Information skill number	Elements cited by students (n = 21)	Number of people
2	Knowledge of relevant and reliable sources	10
1, 2, 3, 4	Guarantor of the documentary process	6
–	Personalized help in addition to the teacher	4
2	Speed of the information-seeking process	1
–	Different approach	1
–	No answer to this question	6

Table 9.4. *"How does an embedded librarian add value to a course?"*

When presented with the open-ended question (Table 9.5) about what pleased or displeased them about integrating a librarian into the course, one-quarter of the students (5 out of 21) reported that having an embedded librarian in the "Digital culture" course was a great help in finding the main sources. One student acknowledged the innovative nature of this experiment and another student complained about the lack of time to call on the librarian.

Elements cited by students (n = 21)	Number
Useful for finding sources	5
Innovative	1
Limited time to call on the librarian	1
No answer to this question	9

Table 9.5. *"Please share your thoughts, comments, suggestions for improvement or any specific items that you liked or disliked about the integration of a librarian into the course"*

Finally, half of the students (11 out of 21) reported that the embedded librarianship had positively changed their relationship with the librarian. Five students believed that the librarian's integration had moderately changed their relationship with the librarian, and one student thought that the librarian's integration into the digital literacy course had not changed anything in their relationship with the librarian. Four students did not answer this question.

9.5. Discussion

Our initial goal was to study how the academic embedded librarian may collaborate with his faculty colleague and help students by seeking information for their assignment. We identified various help forms the embedded librarian provided to them.

Have our embedded librarians experienced an integration as Shumaker (2012) understands it? The embedded librarianship found in these two experiments shows that it partly corresponds to what Shumaker (2012) defines as integrated library science. In both experiments, the librarian and teacher had reflected together on the pedagogical scenario. It was found that the librarian could intervene in class if their schedule allowed them to do so, and that they provided personalized assistance to the students who requested it. The librarian mainly validated the sources students had found, trained them in information-seeking and showed them the library's resources. The librarian's help sometimes went beyond information skills up to training in digital tools, providing advice for problem-solving and implementation. However,

some conditions were not met as integration could be carried out even further. For example, the librarian could be involved in marking the information skills. The librarian would then be a stakeholder in the outcome, as Shumaker (2012) explains. In addition, in both cases, the librarians waited for the students to ask for help. They had still put resources on Moodle, but in one case the necessary communication had not been made. Shumaker explains that it is up to the librarian to anticipate needs (see Table 9.1) and provide assistance to the students before they request it.

Librarians B1 and B2 noted that their course on information skills they usually do at the beginning of the year was less effective than when embedded into a branch course. The following statement illustrates this difference well: "In collaboration with a teacher, information seeking becomes meaningful" (librarian B2). This observation was verified by Shumaker at the level of training equivalent to two years of higher education:

> Information literacy and bibliographic instruction are more effective when they relate to specific courses and assignments. Students are able to immediately apply the concepts and methods of their Information Literacy teaching to the assignments requested in class, and trainers are able to assess the Information Literacy of students as a determining factor in the overall assessment of their assignments[2]. (Shumaker 2012, p. 46)

Finally, we have seen that librarians have encountered a problem already identified by the research on help-seeking: some students did not ask for help. These studies make it possible to understand, on the one hand, that students are not necessarily aware of their need for help, leading them not to ask for it. On the other hand, they may even avoid seeking help if they feel it might threat their self-esteem (see Chapter 10). Research shows that it is the students who need help the most who will seek it the least (Karabenick and Knapp 1988a; Puustinen 1998; Ryan *et al*. 1998; Aleven *et al*. 2006), unlike the best performing students, who do not hesitate to seek help if they think they really need it (Karabenick and Gonida 2017). A system combining an flipped classroom and an embedded librarian could allow the most vulnerable students to take the step and seek the help of the librarian, who, unlike the teacher, is not required to assess the student's performance.

Our study shows that embedded librarianship is quite appropriate in a flipped classroom. In terms of learning, Thobois Jacob and Chevry Pébayle (2020) noted that the cognitive load inherent in the flipped classroom system required that students are provided with tools and supporting activities to help them learn the concepts underlying the skills targeted by the course and to promote their reflexivity.

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2 Translated by the authors.

The librarian provides the help students need, as the results of our G2 survey show: 17 out of the 21 students think that the librarian is quite a help in writing the assignment in the flipped classroom. Moreover, 18 out of the 21 students would recommend having a librarian in online, hybrid and face-to-face courses.

9.6. Conclusion

Our combination of a flipped classroom and an embedded librarianship was a good experience for both students and librarians. The students received personalized assistance from the librarian in addition to the teacher.

Librarians found their own interventions much more effective in class situations, compared to the presentation session organized at the beginning of each year for new students. However, time remains an issue as it is difficult to find enough time to satisfy teachers' needs for support because librarians do not have allocated hours for embedded librarianship in France yet.

Also, due to the small number of participants, this experiment should be extended to many other courses (increase the number of experiments and diversify the themes covered in the documentary research) and other IUT training courses in France. Indeed, various and numerous experiments would help better identify the role of the librarian in students' specific learning paths.

The embedded librarianship could also be improved by verifying whether the librarian is familiar with the LMS environment (Moodle in the case of this experiment). The contributions of the librarian and teacher should be differentiated in Moodle so that students can better identify which resources are related to information skills.

In addition, in order to better assess the learning gains in information-seeking skills, it will be necessary to elaborate a post-test and pre-test. This would help determine, in a controlled manner, whether the librarian's assistance has a beneficial effect on learning. The absence of the G1 students' point of view was a methodological shortcoming. Also we are aware that the lack of the teacher's feedback is a limitation to this first experiment that future research could explore.

Finally, this exploratory research revealed rising issues in information-seeking profession: future research may focus on the professional development of academic embedded librarians, as instructional designs like the flipped classroom are game-changers for both students and librarians.

Even though the embedded librarianship is still rare in French higher education, it seems to constitute a promising perspective facilitating the share of knowledge among faculty members and the desire to collaborate with librarians, following the example of the already highly developed embedded librarianship in the United States.

9.7. References

ADBU (2013). Référentiel des compétences informationnelles. Document, ADBU.

Casaurang, C.C. (2005). L'identité professionnelle des formateurs à la recherche documentaire en premier cycle universitaire. *Documentaliste-sciences de l'information*, 42(3), 200–209.

Chalmel, L., Chevry Pébayle, E., Frisch, M., *et al.* (2016). Articulation et complémentarité des équipes pédagogiques et des services de documentation au cœur de la transformation pédagogique [Online]. DGESIP, Paris. Available at: http://www.enseignementsup-recherche.gouv.fr/pid29939-cid110776/de-la-pedagogie-a-la-documentation.html.

Dewey (2004). The embedded librarian: Strategic campus collaborations. *Resource Sharing & Information Networks*, 17(1-2), 5–17.

Epron, B. (2013). La documentation numérique au premier cycle: quels usages [Online]. *Bulletin des bibliothèques de France*, 1. Available at: http://bbf.enssib.fr/consulter/bbf-2013-01-0045-010 [Accessed January 5, 2016].

Kvenild, C., Tumbleson, B.E., Burke, J.J., Calkins, K. (2016). Embedded librarianship: Questions and answers from librarians in the trenches. *Library Hi Tech News*, 33(2), 8–11.

Landry-Hyde, D., Cantwell, L. Virtually, Y. (2013). Online embedded librarianship in higher education [Online]. *Policy Studies Organization*, 2(2). Available at: http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.830.8136&rep=rep1&type=pdf.

Riccio, H.M. (2012). Embedded librarianship: the library as a service, not a space [Online]. *The New Librarian*. Available at: http://www.aallnet.org/mm/publications/products/aall-ilta-white-paper/embedded.pdf [Accessed June 24, 2015].

Shahril Effendi, I., Fazli, O. (2015). Embedded librarian in higher education institutions. In *International Conference on Libraries: "Openness Paradigm: Emerging Knowledge Ecologies"*. Penang, Malaysia.

Shumaker, D. (2012). *The Embedded Librarian*: *Innovative Strategies for Taking Knowledge Where It's Needed.* Information Today, Medford.

Thobois Jacob, L., Chevry Pébayle, E. (2018a). Acquérir des compétences de littéracie informationnelle en classe inversée: retours sur une expérimentation menée auprès d'étudiants de licence [Online]. In *2e colloque international de l'ATIU "Apprendre, Transmettre, Innover"*. June 20–22, Montpellier. Available at: https://colloqueatiusaison2.wordpress.com/.

Thobois Jacob, L. Chevry Pébayle, E. (2019). Classe renversée et compétences informationnelles: quels effets sur la motivation et l'apprentissage des étudiants ? In *Colloque international "Éducation 4.1 ! Distances, médiations des savoirs et des formations"*. Distances et médiations des savoirs (DMS) et École d'ingénierie de la formation à distance (Eifad) du CNED, Poitiers.

Thobois Jacob, L. Chevry Pébayle, E. (2020). Développer la recherche d'information et l'autorégulation collective en classe renversée: l'apport des tests d'auto-évaluation. *RIPES*, 36(1). Available at : https://journals.openedition.org/ripes/2294.

Thobois Jacob, L., Chevry Pébayle, E., Marquet, P. (2018b). Présence et temporalité des quiz d'évaluation en classe inversée: des effets sur le sentiment de compétence des étudiants ? [Online]. *Distances et médiations des savoirs*, 22. Available at: http://journals.openedition.org/dms/2242 [Accessed June 30, 2018].

Tricot, A., Rafenomanjato, J.K. (2017). Le numérique et le métier d'élève. *Hermès, La Revue*, 2(78).

Seeking and Providing Help in an Interactive Learning Space: The Case of a Flipped Classroom at University

10.1. Introduction

In order to support student success at university, many blended instructional designs have been tested over the past 10 years, including flipped classrooms in various forms.

Our flipped classroom is one particular example. It aims to promote student learning through activity and empowerment (Cailliez and Benin 2017). It is different from a "classic" or "standard type" flipped classroom (Lebrun *et al.* 2017) as most learning activities are carried out during class time, in order to avoid the problem of the student disengagement frequently reported during the outside of class phase (Entfield 2013; Bristol 2014; Guilbault and Viau-Guay 2017; Lo and Hew 2017). In addition, students take the role of the teacher, from the course content to the development of learning activities and evaluation.

We consider that these learning tasks correspond to the "interactive" tasks described in Chi and Wylie's (2014) ICAP (Interactive, Constructive, Active and Passive) model. According to this model, not all tasks have the same impact on learning: "interactive" tasks that require the generation of information by the learners themselves and that create learning tasks for their peers (e.g. producing an object, a digital resource, or writing a text with several people) would be the most cognitively engaging. Nevertheless, by their very complexity, these tasks are also the most demanding, i.e. the most "costly" in effort.

Chapter written by Laetitia THOBOIS JACOB and Chrysta PÉLISSIER.

The notion of effort in relation to learning refers to the self-regulated learning concept, which was first addressed by studying how self-regulated learners work. As a result, according to Cosnefroy:

> they are people who find within themselves the resources to start the work, persist and adapt to the changing conditions of the work in progress… This specific learning mode, known as self-regulated learning, makes it possible to be autonomous, voluntary and strategic in order to succeed. (Cosnefroy 2011, p. 10)

Both definitions emphasize the close link between self-regulated learning and the development of learner autonomy. This implies not only cognitive and metacognitive strategies, but also motivational strategies (or motivational regulation strategies): all of them contributing to the learning process.

Nevertheless, the "social and cultural aspect of self-regulated learning" (Noël and Cartier 2016, p. 18) must also be considered: The relationship between teacher and learners as well as the learning context affect the development of the learner's self-regulation. As a result, other concepts appear such as co-regulation and socially shared regulation (Hadwin and Oshige 2011), and even "hetero-regulation" (Nader-Grosbois 2007; Letalle 2017).

On the other hand, Allal (2007) describes the evolution of the relationship between the help provided by the teacher and the efforts made by the learners themselves to develop their autonomy, according to the three moments of the activity in which they are involved, moving from a proactive regulation (planned upstream) to an interactive and then retroactive regulation.

In this chapter, we first deal with help-seeking as a strategy for regulating motivation, which seems particularly relevant in the context of flipped classrooms (Thobois Jacob 2018a). We will then address the question from the teacher's point of view, as part of a learning regulation strategy. This will lead us to address the interface of self-regulation and co-regulation, which we will call "the interactive learning space". We will then share what we learned from our experience of a flipped classroom set up for first-year students, with the goal of improving their writing skills.

10.2. Theoretical conceptual framework

10.2.1. *Help-seeking in an interactive learning space*

10.2.1.1. *Promoting the self-regulatory learning process*

According to Hadji (2012, p. 13), the concept of self-regulation is at the crossroads of either self-regulation of learning, driven by French-speaking research originally within the scope of evaluation (e.g. the work of Allal 1999), or self-regulated learning (SRL), which has been the subject of several models. The important thing is to distinguish between "self-regulation of learning" and "the learning of self-regulation", commonly called "self-regulated learning" (SRL). While the first focuses on the cognitive and metacognitive learning process, the second addresses the non-cognitive components of performance that are part of motivational regulation strategies: "activating different goals that justify continuing work to the end; keeping a sense of self-efficacy controlling the environment to promote concentration; regulating emotions and seeking help" (Cosnefroy and Fenouillet 2009, p. 138).

The concept of self-regulated learning links complementary dimensions of learning and lies, as wrote Cosnefroy (2011), "between cognition and motivation". Also, self-regulated learning can be taught, in order to achieve the self-regulation of learning.

This conceptual proposal highlights how important the teacher's role is in helping students to identify strategies that enable them to exercise control over their motivation to learn. These strategies, sometimes referred to as "hetero-regulation strategies" (Nader-Grosbois 2007; Letalle 2017), are essential in the conduct of educational action and yet represent a real challenge for teachers, since the first step is to conceive, implement an evaluate learning tasks and the second step is to ensure that the targeted learning is carried out under the best conditions for each and every learner throughout the course.

According to Zimmerman (2000), the development of self-regulatory skills is carried out according to a four-level process on a *continuum* from dependence on the expert to autonomy: the skill or competence is acquired initially through observation (vicarious experience), then the learner becomes increasingly capable of performing the learning task alone, until finally, at the self-regulatory stage, he or she performs it independently. This four-level process clearly shows that the goal is the final stage where the learner can manage the task without the teacher, becoming autonomous in learning.

Similarly, help can be seen as a process organized around a cycle (Pélissier 2014) that articulates a teaching approach in response to a need for help or following observation of how learners conduct the activity. It is expected that the help provided will gradually decrease (Bruner 1983) as the learner acquires knowledge and develops skills in the targeted field.

10.2.1.2. *Help-seeking strategies*

While help-seeking has long been seen as a sign of dependence on the part of the learner, Nelson-Le Gall's (1981) work has shown that it can also be seen as a strategy that reflects learners' abilities to regulate themselves.

Karabenick and Gonida (2017) point out that this pioneering work has identified two types of help-seeking, which differ according to the objectives they pursue. The first type called "executive help-seeking" is part of a work avoidance strategy (e.g. when one asks others for the solution and answers so that one does not have to look for oneself). The second type of help-seeking, called "instrumental help-seeking", corresponds to the approach of a subject whose intention is to make progress in his or her learning and to understand how to resolve problematic situations (Zorn and Puustinen, 2017).

It turns out that this intention is a strategy for regulating motivation, since "the implementation of regulation implies the setting of a goal" (Depover *et al.* 2016, p. 96). However, it differs from other strategies for regulating motivation in two notable ways:

> (a) in contrast to cognitive strategies (e.g., memorization or organization), and except for studying with peers, it often involves some form of social interaction, for instance, between students and teachers either in person or increasingly technology mediated; and (b) it is the only strategy that is potentially stigmatizing due to its implications of inadequacy and one that may incur such other personal costs as the need to reciprocate the helper. (Karabenick and Gonida 2017, p. 421)

This dual characteristic implies that help-seeking is closely linked to the learner's ability to demonstrate not only cognitive and metacognitive skills, but also emotional and social skills, as well as contextual and interpersonal resources (Karabenick and Berger 2013):

– cognitive and metacognitive skills are the ability to identify the difficulty, and become aware of the need for help to overcome this difficulty; they also refer to knowing how to ask for help, i.e. to be able not only to formulate questions, but also to ask relevant questions in relation to the need for help that has been identified, to an expert deemed relevant, in the resolution process;

– emotional skills are the learner's ability to regulate his or her emotions when faced with a difficulty: the idea of appearing incompetent can threaten the learner's self-esteem and create a sense of shame that can lead them to give up seeking help: asking for help can generate a sense of weakness towards the person whom they are addressing (line manager, teacher with whom they are already in conflict on other points), and also towards their peers who may make fun of them and thus hurt the actor's own self-esteem;

– social skills are the ability to identify people who can best help under different conditions and also to know how to approach those people in a socially desirable manner.

The identification of these elements made it possible to separate the help-seeking process from the notion of need. Indeed, as we have seen, on the one hand, learners are not necessarily aware of their need for help, which leads them to not seek it. On the other hand, they may even avoid seeking help because they feel threatened in their self-esteem (see emotional competence mentioned above): low-performing students, who are objectively those who need help most, are therefore also those who will seek it the least (Karabenick and Knapp 1988; Puustinen 1998; Ryan *et al.* 1998; Aleven *et al.* 2006). On the contrary, the most successful students, who use other strategies more frequently, are the most likely to ask for help if they think they really need it (Karabenick and Gonida 2017). This work confirms the observation of Zimmerman and Martinez-Pons (1990): the request for help is most often made by more advanced students rather than by less advanced students.

Finally, according to Newman (2008), learners perceive a difference between formal help-seeking from a teacher and informal help-seeking from only peers, in terms of impact on their learning and cost. For Ryan and Shim (2012), informal (peer-to-peer) help-seeking is considered more accessible than formal (student-to-teacher) authoritative research; however, informal peer help may be perceived as less likely to provide the desired information than formal help from the teacher, whose role requires them to have already identified some potential pitfalls and strategies for bypassing them.

10.2.1.3. *Help-designing : social and pedagogical dimensions of co-regulation*

Social dimension

In order to help learners in their learning, the teacher's intervention can take place on several occasions:

– following a search for information that the learner carries out alone or in a group;

– following a request for help during the learning activity;

– before any activity of the learner in order to anticipate a potential difficulty;

– following how learners are linking new knowledge to previous knowledge.

Various interactions between learners and teachers can therefore be considered in several ways, depending on the context and the teaching–learning situation. This context refers, on the one hand, to the class climate marked either by norms that govern interactions in the group, which Mottier-Lopez (2016, p. 67) called "class microculture", which may or may not facilitate mutual help (Duthoit *et al*. 2011) On the other hand, the teacher's posture and teaching style may or may not encourage help-seeking. With regard to the latter point, Newman (2000), cited by Karabenick and Gonida (2017), clearly described the role of the teacher in socializing the request for help, as it includes both instrumental and emotional support:

– a positive relationship with students can facilitate teacher–student communication;

– proximal academic goals can support self-regulated learning;

– the fact that they often carry out experiments.

Pedagogical dimension

As we have seen, the teacher can plan various help types:

– proactive help: before the learning activity

– reactive help: during the learning activity

– reflective help: after the learning activity

Proactive help (Gerbault 2006), by definition, anticipates requests for help the learners might need in order to process the learning activity. In a digital environment, this support can take the form of a support section (Capobianco and Carbonell 2006) with a label such as "help" or "?" These forms of help aim to improve the understanding of the task to be carried out and/or the execution of the task according to a very precise methodology. Sometimes these forms of help are not used or are used inappropriately (Aleven *et al.* 2003).

Reactive help (Gerbault 2006) corresponds to the response to requests for help during the learning activities. These can be requests for confirmation (on the chosen methodology or the results of the information research carried out) or requests for understanding, for instance when the teacher gave feedback about a learning production. When recorded by a computer tool, the digital traces of interactions (Lund and Mille 2009) lead to adjustments in the teaching strategy and/or the helping strategy.

Finally, reflective help, widely developed in the literature on teacher training (Campanale 2007), questions the instructional design of personal learning environments (PLE) (Mailles-Viard Metz *et al*. 2014), learning activities that may enhance learning regulation (Felder 2017).

As a result, for the teacher, the implementation of a co-regulation strategy raises questions about how and when help should be provided in the learning process (Pélissier 2019). This leads to a cycle of help design, with four main stages:

– the need for help formulated by the learners and/or observed by the teacher (based on learning traces);

– the production help in relation to the proposed activity, based on his or her perception of the learning task, previous experience as a caregiver and resources (Noël 2017; Lédé and Pélissier 2019) (digital or not) available at the time of production of the form of help;

– the evaluation of the contributions of the help produced;

– the outcome of the help (archiving, permanent or temporary abandonment/ disappearance), the teacher considering (or not) the possible reuse of this form of help during a future teaching activity.

In this cycle (Pélissier 2014), the notion of resources mentioned in step 2 is essential as it makes it possible to face a situation or solve a problem[1], thanks to a "set of information, documents, software, programs, databases, etc., that make it possible to convey, transmit or understand teaching concepts and content" (Puimatto 2004). By "resources" we refer to course components that convey support to learners who can mobilize it. This support is integrated into the help process according to its specificities. We can therefore distinguish the help cycle that is organized around the four steps listed above (see section 10.2.1.3) and the resource that appears only at the level of step 2 during the processing of the request for help. The choice of integrating a resource is driven by the teacher's co-regulation strategy, which attemps to facilitate the learner's self-regulation process.

10.2.2. *Integrating help types in the "interactive learning space"*

In the learning process, the co-regulation strategy implemented by the teacher and the self-regulation process exercised by the learner are thus articulated in the same space (Greco *et al*.) :

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1 Gérard Puimatto, *Le Café pédagogique*, http://www.cafepedagogique.net/lemensuel/ lenseignant/documentation/Pages/2012/133_CDI_Reportage.aspx, 2012.

> On the one hand, the space is shaped by the environment of the learning situation; on the other hand, it is modified by the practices and wanderings of the participants, i.e. language practices. Actors can thus create new spatialities and redefine the boundaries of space. (Greco *et al*. 2009, p. 265)

This quote underlines that the learning "space" is delimited by the actors (teachers and learners) who cohabit for a given time in the same place, who make choices, verbalize them and co-construct an environment where the teacher's co-regulation strategy and the learners' self-regulation operations meet. It is this environment that we call the "interactive learning space".

Six main help types are likely to occur in the "interactive learning space"

– H1. Proactive help, proposed by the teacher: integrated into the co-regulation strategy. This help type anticipates the learner's activity;

– H2. Reactive help, proposed by the teacher: produced with or without an existing resource (e.g. Internet link, text/video/audio files). This help type is a response to a formulated request during the learning activity;

– H3. Reflective help, proposed by the teacher: This help type intends to make the learner question how he processed the learning activity (self-assessment) once this activity is finished;

– H4. Unforeseen help refers to help that has not been organized by the teacher or produced by the learner during the activity. This unforeseen help is identified as necessary by the teacher or the learner after the learning activity and may be proposed in the future;

– H5. Reactive help, organized by the learner: This help type responds to a need identified by the learner, with reference to forms of help already received in the context of another activity. It can also be developed through the diversion of use (Pélissier and Mailles-Viard Metz 2010) of a resource already used. As a result, on the basis of his or her personal practices and knowledge (cognitive, technological, organizational), the learner succeeds in transferring a resource that meets a need for help identified during his or her activity;

– H6. Self-reflective help: produced by the learners themselves; they meet the need to assess the knowledge built and the skills acquired during the activity.

Each of these help types is therefore driven either by the teacher (H1, H3) when implementing his or her co-regulation strategy, or by the learner, who sets up a self-regulatory learning process (H2, H5 and H6).

However, help types H1', H2' and H3' still have a special status. H1' corresponds to help that has been planned by the teacher (H1) but not used by the learner in his or her learning strategy. H2' is help requested by the learner and produced by the teacher, but ultimately not used. Finally, H3' is help proposed by the teacher, but which the learner may not take up or may take up partially, depending on his or her ability to deepen the reflective analysis related to his or her behavior and/or progress during the learning activity.

In order to experiment with these various help types in an ecological context, we tested their implementation as part of a flipped classroom with first-year DUT students.

10.3. Context and methodology

10.3.1. *Developping writing skills of DUT students[2]*

Even though an increase in motivation and improved engagement promote the success of technological baccalaureate graduates (Lardy, 2017) at the DUT, the success of the first year in higher education in France seems very strongly correlated with the baccalaureate obtained and the academic level of the student when they enter higher education (Duru-Bellat and Kieffer 2008; Morlaix and Suchaut 2013). In particular, the learner's ability to write in French plays an essential role. Various studies highlight the increasing student population struggling with writing issues as they access university (Montballin *et al.* 1995; Lambert 2012), which affects both their academic career and their integration into the labor market (respectively Belilly *et al.* 2016 and Martin Lacroux 2015).

Asking students to produce something can be an effective way of helping them to engage in learning activities that both improve their spelling and writing skills and change from the traditional grammatical exercises that students consider too academic, boring and ineffective.

In 2018, two DUT teachers therefore asked first-year students to produce, as part of a flipped classroom system, a grammar explanatory tutorial in audiovisual format. The first goal was to encourage them to relearn grammar knowledge that had been forgotten or not applied when needed, i.e. when writing an essay or a summary. The second goal was to enhance students' engagement by proposing a creative activity. This experiment followed an initial observation made the previous year with students enrolled in a DUT Information Communication course at the University of Strasbourg (Thobois Jacob 2018b). This second iteration brought together two groups of students from two different DUT specialties: group 1 refers,

2 In France DUT stands for "Diplôme Universitaire de Technologie".

as already established, to students in the DUT Information Communication course (IC, University of Strasbourg) and group 2 refers to students enrolled in the Multimedia and Internet Professions course (MMI, University of Montpellier).

10.3.2. Our flipped classroom design

If, as we have seen, in the context of the flipped classroom, students do not always carry out the required preparatory activities before the classroom sessions (Entfield 2013; Chevalier and Adjedj 2014; Nizet and Meyer 2016), the situation is quite different in the "open flipped classroom" where students have to produce learning content in a creative manner (Cailliez and Benin 2017; Thobois Jacob 2018a). No learning material is provided to students, as they already had French grammar courses in their scholarship: therefore, we see this "open flipped classroom" as an opportunity for students to engage with one particular aspect of this topic, according to their positioning test results. Students seek information in a collaborative way (with the teacher and peers) and actively contribute to the co-construction of the learning content. Through this approach, the flipped classroom is close to the concept of learning according to the principle of *L'education nouvelle*: "the less we are taught, the more we learn", because "to be taught is to receive information and to learn is to seek it" (Cousinet cited by Carré 2005, p. 146).

The proposed system is organized around five face-to-face sessions which correspond to five stages of a continuous pedagogical progression:

– Stage 1: students perform a positioning test (multiple choice pre-test) via the Moodle platform, as well as a test about their perceived self-efficacy in academic writing, based on a French test established by Viau (1994, appendices). Based on their test results, students target a specific grammatical rule and divide into groups (two to three students);

– Stage 2: before the course, each group collects online content about the specific grammatical rule they need to study and write a summary of it. This work will be reviewed by the teacher during class time. Then they imagine examples to explain this rule, create a storyboard of their audiovisual production (limited to 2 minutes) and consider the shooting conditions;

– Stage 3: an evaluation grid is co-constructed: it serves both as a criteria grid to help students pay attention to the essential elements to consider when producing the deliverable and as a tool to evaluate the work of the other groups during Stage 4. Students independently record and edit the video outside class;

– Stage 4: students view the different productions made by the other groups of students and evaluate them using the grid co-constructed in Stage 3;

– Stage 5: they finally carry out a second writing test (multiple choice post-test) and another test of perceived self-efficacy in writing, including two open-ended questions to identify the pros and cons of this learning activity.

10.3.3. *Participant profiles*

Both groups of students achieved a high school degree (50% general, 50% technological) with similar knowledge of spelling, filming and audiovisual editing techniques. Nevertheless, their learning path and goals differ: IC students intend to work on projects related to community management, advertising, marketing; MMI students plan to work in digital artistic production such as website design and/or development, video/radio clips production, or 3D animation work for video games. A total of 78 students participated in this study.

Department	Female	Male	Total
MMI	13	20	33
IC	33	12	45
Total	46	32	78

Table 10.1. *Breakdown of the participants' profiles*

10.4. Integrating help types in our flipped classroom

10.4.1. *Help types distribution*

Three types of help appear in our system: proactive help (H1), reflective help (H3) and unforeseen help (H4). It therefore lacks the reactive help from the teacher following a request for it (H2), the reactive from help from the learner (H5) and the self-reflective (H6) help.

The absence of reactive help (H2) corresponds to a lack of demand from students while performing the learning task: it remains to be seen whether this corresponds to a real absence of a need for help and whether it concerns all learners or only some of them. Indeed, we saw earlier that help-seeking was not necessarily connected to the need for it and that this need could be inhibited by a sense of threat to one's self-esteem. For the time being, an explanatory hypothesis can be put forward: tests of perceived self-efficacy in academic writing show that students felt generally competent to perform the requested task, in terms of both spelling rules and technical audiovisual production. With regard to writing, it goes without saying that most students had extensive prior knowledge since elementary school, although they

did not necessarily transfer it when writing academic work. Concerning audiovisual production, students had a certain command of filming (using cell phones and tablets) and editing tools (on free applications potentially seen in high school as part of supervised projects) that enabled them to carry out the requested activity. It should be noted that a perception of high competence (grammatical or technical) may well coexist with low self-esteem: the perception of competence refers to the perceived self-efficacy associated with a belief in the performance that the learner thinks he/she is capable of achieving, while self-esteem refers to the personal qualities of the subject in general (Zimmerman 2000).

Concerning the absence of reactive help from the learner, we note that many audiovisual resources dealing with grammatical rules or technical procedures to be followed for recording and editing work are available on the Internet (especially on the popular YouTube platform): students may have preferred to do a search for online or peer help.

Finally, the absence of self-reflective help produced by learners may be linked to a personal learning approach that is not yet integrated into the habits of most students, who are rarely invited to practice self-assessment (Thobois Jacob 2018a).

10.4.2. *Proactive help type*

All the proactive help designed by the teacher was used at least once by the students. This help type focuses on organizational aspects.

Proactive help type focus	Description
Time	The days and times that students must return their work are specified.
Format	The procedure for uploading files to Moodle (pdf, drive, mp4) is explained; the formats are known to students.
Task description	Instructions are available in written form and can be accessed at any time via Moodle. Examples of final products: the provision of the audio productions of learners from the previous year.
Methodology	Production of a collaborative criteria grid (Stage 3).

Table 10.2. *Proactive help types*

10.4.3. *Reflective help type*

The reflective help intends to make each learner aware of his or her state of (cognitive) knowledge and/or progress in learning and production (artifact, object in the process of being created).

Reflective help type focus	Description
From prior to acquired knowledge	Prior knowledge: a positioning grammar test helps students identify which grammar rule to focus on (stage 1) A second positioning grammar test helps students visualize their learning progress (stage 5).
Perceived self-efficacy	Before the learning activity: a perceived self-efficacy test focused on French grammar helps students reflect on their perceived ability in spelling and writing academic work (stage 1). Students take the same test at the end of the course: it helps them reflect on their perceived progress in writing academic work (stage 5).
Course assessment	Students reflect on their learning experience and determine what they learned from it and how they would improve it.

Table 10.3. *Reflective help types*

10.4.4. *Unforeseen help type*

According to students' feedback, we could define help types that should be implemented in the next course iteration.

Unforeseen help type focus	Description
Guiding project management	Students expressed the need for guidance in: – the formulation of the grammar rule they have incorporated into the video; – the management of the time allocated to the different productions/deliverables. Despite the presence of written instructions associated with each step, students expressed the need to be reminded orally at each session of the instructions and the time to be allocated to each subtask (formulation of the rule, context, examples, shooting, editing, etc.); – group work management. The students underlined the need for support in the distribution of tasks in the group and in monitoring the progress of each of them; – the enhancement of the originality of the products. Students

Unforeseen help type focus	Description
	wanted to see more creative and original aspects (at the technical or script level) taken into account, which was only slightly the case in the co-constructed evaluation grid upstream; – the management of peer review. To avoid errors or cheating, students emphasized a need for teacher control.
Having courses and examples	Some students expressed the need to have: – courses on editing and filming techniques (sound quality, framing, plan, diversity of techniques). They pointed out their difficulty in using some of the software present at the IUT and their lack of practice in this field; – more examples presenting different techniques to get more original ideas, related to a professional situation.

Table 10.4. *Unforeseen help types*

10.5. Conclusion

Our analysis reveals a lack of reactive help, mostly because students tried to pursue the learning activity without asking for it.

However, this statement will not necessarily lead to additional proactive help. Indeed, each class is different, so it is difficult to anticipate every help students might need. The needs mentioned did not prevent students from producing the requested audiovisual production: 100% of students achieved the requested learning production.

It seems students mostly need to be reassured and better supported: on the one hand, the flipped classroom is potentially destabilizing for first-year students, who are more accustomed to traditional teaching; on the other hand, our leaning activity consisted of producing a video which comes out of common productions that mainly rely on writing. Nevertheless, students proved to be quite capable of producing a video. Finally, most students were surprised by the flipped classroom instructional design itself, as they are used to more teacher guidance about instructions, methods, time management. Also students have little experience in assessing peer work.

However, in the perspective of a future iteration of this flipped class, following the requests made by the learners, an adjustment could be considered in relation to:

– a reminder of the different activities carried out during the previous sessions;

– the contribution of examples of previous audiovisual productions;

– the modalities of co-construction of the evaluation grid;

– a better monitoring of the activity carried out by each group (e.g. with a logbook) to keep track of decisions taken collectively, the distribution of the different tasks carried out by each member, to ensure the success of the collective work and reassure each of the participants.

In this chapter, we have presented various help types that may arise in a learning interactive space supporting the development of learners' self-regulation, through a co-regulation strategy.

These help types come from the teacher (proactive, reactive, reflective) and from the learner (reactive, created/diverted, self-reflective).

These various help types were then observed through the implementation of a flipped classroom in DUT. On the one hand, the proactive and reflective help types offered by the teacher were observed, but unforeseen help types also emerged. On the other hand, no reactive help was provided mainly due to the lack of a request, although needs were expressed after the event. One explanation would be related to the nature of the requested learning production. First, video is familiar to students; this could made them believe they would master the production easily. Second, students have prior knowledge in French grammar, so the requested learning production did not seem difficult.

One point remains unclear: asking students to explain and illustrate a grammar rule does not automatically mean that they will apply it when writing their next academic work. An further investigation on how they succeed in academic writing later on (a few months after the production has been rendered), would allow us to analyze the usefulness and the meaningfulness of integrated help types in the flipped classroom design help.

For the time being, we observe that students' needs differ according to their learning path. While all students (DUT IC and MMI) underlined the need for additional time to produce the requested video, only MMI students expressed a need for peer evaluation, whereas IC students highlighted their need for technical help that would allow them to produce even more creative audiovisual productions.

Finally, this experiment shows that help is a dynamic, fragile, individual process, influenced by the activities and actions of all the actors involved (teachers and learners). This is why a deep analysis of the various help types that might be needed along the learning process may facilitate interactions, course design and students learning and the development of self-regulated learning skills by undergraduate students.

10.6. References

Aleven, V., Stahl, E., Schworm, S., *et al.* (2003). Help seeking and help design in interactive learning environments. *Review of Educational Research*, 73(2), 277–320.

Aleven, V., McLaren, B., Roll, I., Koedinger, K. (2006). Toward meta-cognitive tutoring: a model of help-seeking with a cognitive tutor. *International Journal of Artificial Intelligence in Education*, 16, 101–130.

Allal, L. (1999). Impliquer l'apprenant dans le processus d'évaluation: promesses et pièges de l'auto-évaluation. In *L'évaluation des compétences et des processus cognitifs. Modèles, pratiques et contextes*, Depover, C., Noël, B. (eds). De Boeck, Brussels, 35–56.

Allal, L. (2007). Régulation des apprentissages, orientations conceptuelles pour la recherche et la pratique en éducation. In *Régulation des apprentissages en situation scolaire et en formation*, Allal, L., Mottier Lopez, L. (eds). De Boeck, Brussels.

Belilly, E., L'Horty, Y., Sarfati, L. (2016). Faut-il encourager les étudiants à améliorer leur orthographe ? [Online]. TEPP (Travail, emploi et politiques publiques) research report, 2016(1). Available at: https://hal.archives-ouvertes.fr/hal-01292167/document.

Bristol, T. (2014). Flipping the classroom. *Teaching and Learning in Nursing*, 9(1), 43–46.

Bruner, J. (1983). *Le développement de l'enfant.* Retz, Paris.

Cailliez, J.-C., Hénin, C. (2017). *La classe renversée – L'innovation pédagogique par le changement de posture*. Ellipses, Paris.

Campanale, F. (2007). Analyse réflexive et auto-évaluation dans la formation des enseignants: quelles relations ? In *Évaluation et développement professionnel*, Jorro, A. (ed.). L'Harmattan, Paris.

Capobianco, A., Carbonell, N. (2006). Aides en ligne à l'utilisation de logiciels grand public: problèmes spécifiques de conception et solutions potentielles. *Intellectica*, 2(44), 87–120.

Carré, P. (2005). *L'Apprenance. Vers un nouveau rapport au savoir*. Dunod, Paris.

Chevalier, L., Adjedj, P.J. (2014). Une expérience de classe inversée à Paris-Est. *Technologie*, 194(1), 26–37.

Chi, M.T.H., Wylie, R. (2014). The ICAP framework: linking cognitive engagement to active learning outcomes. *Educational Psychologist*, 49(4), 219–243.

Cosnefroy, L. (2011). *L'apprentissage autorégulé. Entre cognition et motivation*. Presses universitaires de Grenoble, Grenoble.

Cosnefroy, L., Fenouillet, F. (2009). Motivation et apprentissage scolaire. In *Traité de psychologie de la motivation*, Carré, P., Fenouillet, F. (eds). Dunod, Paris, 127–147.

Depover, C., Melot, L., Strebelle, A., Temperman, G. (2016). Régulation et autorégulation dans les dispositifs d'apprentissage à distance. In *De la métacognition à l'apprentissage autorégulé*, Noël, B., Cartier, S. (eds). De Boeck Supérieur, Louvain-la-Neuve, 95–108.

Duru-Bellat, M., Kieffer, A. (2008), Du baccalauréat à l'enseignement supérieur en France: déplacement et recomposition des inégalités. *Population*, 63(1), 123–157.

Duthoit, E., Charnet, C., Mailles-Viard Metz, S., Pélissier, C. (2011). Entraide en ligne: le cas d'un forum de discussion utilisé en tant que ressource externe au contexte d'apprentissage. In *Colloque EPAL (Échanger pour apprendre en ligne)*. EPAL, Grenoble.

Entfield, J. (2013). Looking at the impact of the flipped classroom model of instruction on undergraduate multimedia students at CSUN. *TechTrends: Linking Research and Practice to Improve Learning*, 57(6), 14–27.

Felder, J. (2017). Comprendre les processus de construction et de régulation des EPA par des étudiants universitaires. *STICEF*, 24(3).

Gerbault, J. (2006). Interactions et aides: Potentiel, pertinence et personnalisation. Actes du colloque international TICE et didactique des langues étrangères et maternelles: la problématique des aides à l'apprentissage. In *La problématique des aides à l'apprentissage*, 2, Foucher, A.-L., Pothier, M., Rodrigues, C., Quanquin, V. (eds). Presses universitaires Blaise Pascal, Clermont-Ferrand.

Greco, L., Bruxelles, S., Mondada, L. (2009). Pratiques de transition: ressources multimodales pour la structuration de l'activité. In *Méthodologies d'analyse de situations coopératives de conception*, Détienne, F., Traverso, V. (eds). PUN, Nancy, 221–301.

Guilbault, M., Viau-Guay, A. (2017). La classe inversée comme approche pédagogique en enseignement supérieur: état des connaissances scientifiques et recommandations. *Revue internationale de pédagogie de l'enseignement supérieur*, 33(1).

Hadji, C. (2012). *Comment impliquer l'élève dans ses apprentissages. L'autorégulation, une voie pour la réussite scolaire*. ESF Éditeur, Issy-les-Moulineaux.

Hadwin, A., Oshige, M. (2012). Self-regulation, coregulation, and socially shared regulation: exploring perspectives of social in self-regulated learning theory. *Teacher College Record*, 113(2), 240–264.

Henri, F., Compte, C., Charlier, B. (2007). La scénarisation pédagogique dans tous ses débats... *Revue internationale des technologies en pédagogie universitaire*, 4(2), 14–24.

Karabenick, S.A., Berger, J.-L. (2013). Help seeking as a self-regulated learning strategy. In *Applications of self-regulated learning across diverse disciplines. A tribute to Barry J. Zimmerman*, Bembenutty, H., Cleary, T.J., Kitsantas, A. (eds). IAP, Charlotte, 237–261.

Karabenick, S.A., Gonida, E.N. (2017). Academic help seeking as a self-regulated learning strategy. In *Handbook of self-regulation of learning and performance*, Alexander, P.A., Schunk, D.H., Greene, J.A. (eds). Routledge, Abingdon.

Karabenick, S.A., Knapp, J.R. (1988). Help seeking and the need for academic assistance. *Journal of Educational Psychology*, 80, 406–408.

Lambert, M. (2012). La performance académique des étudiants de premier cycle universitaire: influence des capacités cognitives et de la motivation [Online]. PhD thesis, Université de Bourgogne, Dijon. Available at: https://tel.archives-ouvertes.fr/tel-00780578v1/document.

Lardy, L. (2017). Les facteurs qui influencent la réussite académique dans la filière technologique de l'université française [Online]. Education PhD thesis, Université Grenoble Alpes, Grenoble. Available at: https://tel.archives-ouvertes.fr/tel-01690165/document.

Lebrun, M., Gilson, C., Goffinet, C. (2017). Vers une typologie des classes inversées: Contribution à une typologie des classes inversées: éléments descriptifs de différents types, configurations pédagogiques et effets. *Éducation et formation*, e-306.

Lédé, S., Pélissier, C. (2019). Trois facteurs de réussite dans la réutilisation des ressources numériques: le cas d'un cours de droit à l'université [Online]. In *Actes du colloque Ludovia#CH 2019*. HEIG-VD, HEP, Yverdon-les-Bains, April 16–18, 27–30. Available at: https://ludovia.ch/2019/wpcontent/ uploads/2019/04/Actes-2019_V4.pdf.

Letalle, L. (2017). Autorégulation et hétérorégulation en situation d'apprentissage d'itinéraires chez des adolescents et des jeunes adultes présentant une déficience intellectuelle [Online]. PhD thesis, Université Charles de Gaulle Lille III, Lille. Available at: https://tel.archives-ouvertes.fr/tel-01779138.

Lo, C.K., Hew, K.F. (2017). A critical review of flipped classroom challenges in K-12 education: possible solutions and recommendations for future research. *Research and Practice in Technology Enhanced Learning*, 12(4).

Lund, K., Mille, A. (2009). Traces, traces d'interactions, traces d'apprentissages: définitions, modèles informatiques, structurations, traitements et usages. Analyse de traces et personnalisation des environnements informatiques pour l'apprentissage humain. *Hermes*, 21–66.

Mailles-Viard Metz, S., Vayre, E., Pélissier, C. (2014). Scénario pédagogique pour la réalisation d'une maquette d'EPA par des étudiants de 1re année de licence: une aide à l'autorégulation de l'apprentissage ? *STICEF*, 21.

Martin Lacroux, C. (2015). L'appréciation des compétences orthographiques en phase de présélection des dossiers de candidature: pratiques, perceptions et implications pour la GRH. PhD thesis, Université de Toulon, Toulon.

Montballin, M., Van Der Brempt, M., Legros, G. (1995). Maîtriser le français écrit à l'université: un simple problème de langue ? *Revue des sciences de l'éducation*, 21(1), 59–74.

Morlaix, S., Suchaut, B. (2013). Les déterminants sociaux, scolaires et cognitifs de la réussite en première année universitaire. *Revue française de pédagogie*, 180(3), 77–94.

Mottier-Lopez, L. (2016). La microculture de classe: un cadre d'analyse et d'interprétation de la régulation située des apprentissages des élèves. In *De la métacognition à l'apprentissage autorégulé*, Noël, B., Cartier, S. (eds). De Boeck Supérieur, Louvain-la-Neuve, 67–78.

Nader-Grobois, N. (2007). Vers un modèle intégré de l'autorégulation et de l'hétéro-régulation ? In *Régulation, autorégulation, dysrégulation*, Nader-Grosbois, N. (eds). Mardaga, Wavre, 15–30.

Nelson-Le Gall, S. (1981). Help-seeking: An understudied problem-solving in children. *Developmental Review*, 1, 224–246.

Newman, R.S. (2008). Adaptive and non-adaptive help seeking with peer harassment: An integrative perspective of coping and self-regulation. *Educational Psychologist*, 43, 1–15.

Nizet, I., Mayer, F. (2016). Inverser la classe: effets sur la formation de futurs enseignants. *Revue internationale de pédagogie de l'enseignement supérieur*, 32(1).

Noël, E. (2017). Quelle évaluation des ressources pédagogiques [Online]. Journée d'étude des URFIST, Évaluation et validation de l'information sur Internet, January 31, 2017, Paris. Available at: https://urfistreseau.files.wordpress.com/2007/02/enoel31janvier2007.pdf.

Noël, B., Cartier, S. (2016). Introduction: De la métacognition à l'apprentissage autorégulé. In *De la métacognition à l'apprentissage autorégulé*, Noël, B., Cartier, S. (eds). De Boeck Supérieur, Louvain-la-Neuve, 9–24.

Pélissier, C. (2014). Le processus d'aide dans un dispositif numérique [Online]. *Formation et profession*, 22(1), 41–52. Available at: http://formation-profession.org/fr/files/numeros/7/v22_n01_55.pdf.

Pélissier, C. (2019). *Learner Support in Online Learning Environments*. ISTE Ltd, London and John Wiley & Sons, New York.

Pélissier, C., Mailles-Viard Metz, S. (2010). Deviating technologies to design personal and creative help in e-learning. *Procedia – Social and Behavioral Sciences*, 2(2), 3552–3557.

Puimatto, G. (2004). Petit glossaire à usage commun pour le pilotage et la conduite de projets d'espaces numériques d'éducation [Online]. *Les dossiers de l'ingénierie éducative*, 46. Available at: http://www.cndp.fr/archivage/valid/55454/55454-8363-10275.pdf.

Puustinen, M. (1998). Help-seeking behavior in a problem-solving situation: Development of self-regulation. *European Journal of Psychology of Education*, 13(2), 271–282.

Ryan, A.M., Shim, S.S. (2012). Changes in help-seeking from peers during early adolescence: Associations with changes in achievement and perceptions of teachers. *Journal of Educational Psychology*, 104, 1122–1134.

Ryan, A.M., Gheen, M.H., Midgley, C. (1998). Why do some students avoid asking for help? An examination of the interplay among students' academic efficacy, teachers' social-emotional role, and the classroom goal structure. *Journal of Educational Psychology*, 90(3), 528–535.

Thobois Jacob, L. (2018a). Les classes inversées en premier cycle universitaire: de la motivation initiale à l'autorégulation de l'apprentissage [Online]. PhD thesis, Université de Strasbourg, Strasbourg. Available at: http://www.theses.fr/2018STRAG048.

Thobois Jacob, L. (2018b). Un vidéxéo en classe renversée: Une activité efficace pour l'amélioration de l'expression écrite des étudiants ? [Online]. In *Actes des 7ᵉ rencontres des jeunes chercheurs en EIAH (RJC EIAH)*. ESPE de Besançon, April 2018. Available at: https://hal.archives-ouvertes.fr/hal-01769519.

Viau, R. (2009). *La motivation en contexte scolaire*. De Boeck, Brussels.

Zimmerman, B.J. (2000). Attaining self-regulation, a social cognitive perspective. In *Handbook of self-regulation*, Boekaerts, M., Pintrich, P.R., Zeidner, M. (eds). Academic Press, London, 13–39.

Zimmerman, B.J., Martinez-Pons, M. (1990). Student differences in self-regulated learning: Relating grade, sex, and giftedness to self-efficacy and strategy use. *Journal of Educational Psychology*, 82, 51–59.

Zorn, S., Puustinen, N. (2017). L'aide aux apprentissages: le cas des collégiens avec un trouble du spectre de l'autisme et de leurs enseignants. *Recherches en éducation*, 30, 111–124.

Conclusion

The real interest of the AIDUC group[1] – and therefore of this book – lies in bringing French-speaking researchers from different disciplines together to work on the same research topic: help in relation to learning that takes place in elementary, junior high, or high school, or during vocational or university training. This object of study crosses the boundaries between disciplines!

The reading of the preceding chapters, which are very stimulating, gives rise to many comments, some of which will be included in this conclusion. Rather than provide a summary of the work carried out, these few pages will take the form of an overall reflection on the themes addressed in this book, in particular those related to teaching and/or learning.

C.1. Teaching: helping to learn

First of all, almost all the authors have examined, in one way or another, the teachers' work, whether in secondary or post-secondary education, and the term accompanying comes up very regularly. However, the definitions of accompanying differ from one author to another.

While relying on other references, Gremion (Chapter 2) puts forth a definition that is reminiscent of the one proposed by Weil-Barais (1993). This latter author considered that when students learn through instruction[2], the teachers' role is twofold: on the one hand, they transmit information (it corresponds to the "instruction" side of their task) and, on

Conclusion written by Minna PUUSTINEN.

1 http://www.aiduc.fr/.

2 That is, situations in which a teacher (or "expert") has the function of transmitting to pupils, students, apprentices, etc. (learners) knowledge that they did not have beforehand.

the other hand, they help learners to assimilate that information in order to transform it into knowledge. Gremion (Chapter 2) considers this dual function (aiming at the conformity and standardization of professional practices and supporting the development of learner autonomy and responsibility) to lead to a paradoxical situation, insofar as the trainer finds himself at the crossroads of two paradigms, that of teaching and that of learning. He illustrates the paradigm of teaching, which refers to guidance, through the image of a path where the guide walks in front of the learner because he or she knows the path to follow; and the paradigm of learning, which refers to accompanying, through the image of an accompanying person walking behind the learner. In other words, a teacher is supposed to be at the same time in front of and behind the learner.

Paul's (2009) definition, cited by Loisy (Chapter 7), completes our reflection in an interesting way: accompanying means joining someone, to go where he or she goes at the same time as he or she does. In addition to being in front of and behind learners, teachers would thus also walk beside them. Does this not mean that help is an integral part of every teacher's work (see Weil-Barais 1993), or even that "help is a constituent dimension of the teachers' profession: teaching is helping to learn" (author's translation)[3]?

If helping is at the heart of any teacher's job, what is learning, or what is its aim? The interpretation by Loisy (Chapter 7) introduces reflection on this issue very well. According to her, the ultimate goal of accompanying is to make the accompanied person autonomous, in the sense that he or she continues the process of learning and development once the accompanying has come to its end.

C.2. Learning: becoming autonomous with the help of others

Autonomy – making learners autonomous, developing their autonomy – is one of the most commonly used keywords in this book. But what is autonomy, in relation to learning? Can learners become autonomous on their own, or do they necessarily need to be helped for it?

If learning is "a change in the ability to perform a task, resulting from an interaction with the environment" (Houdé 2003, p. 48, author's translation), then autonomy can be considered, in the strict sense of the term, as an "increased" ability to perform a given task by oneself. In a broad sense, however, and seen from the Vygotskian and Brunerian perspective, autonomy is not limited to successful completion of a given task: being autonomous means being able to see beyond that particular task, to understand that it is part of a broader category, to know how to solve tasks of this type effectively, but also to

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3 Editorial. *Recherches* (revue de didactique et de pédagogie du français), no. 64, 2016.

seek help in case of difficulty, for instance. In short, it means having metacognitive and self-regulatory knowledge and skills (see, in Chapter 8, the work of Bellet and Mailles-Viard Metz on scripted accompanying of autonomy). We could add that being autonomous also means knowing how to control one's motivation and emotions in a learning situation (see, in Chapter 5, the work of Burgues, Huet and Sakdavong on motivational factors). In this case, we can consider that, in a (very) broad sense, autonomy means possessing the ability "to learn to learn"[4].

Consequently, when trying to answer the question "Can learners become autonomous on their own?" we can consider at least two scenarios. Firstly, if we focus on autonomy in the strictest sense, the answer is clearly "yes": learners can achieve an "increased" ability to perform a given task on their own, by proceeding by trial and error, for example, without any exterior help. Besides, it seems that we all tend to proceed that way when it comes to discovering a new functionality (of a digital product, a website, an application, etc.), for example[5]. Learners may also progress by referring to resource materials (document, YouTube video, etc.) created by someone else, with (or without) underpinning pedagogical rationale, and without any direct interaction with a helper. Finally, even if the achievement of this type of autonomy is possible without the intervention of a helper as we have just seen, it seems obvious that most of the time, one or more persons (peer, teacher, librarian, teaching assistant, etc.) contribute directly to it, especially in the context of in-class learning in elementary, junior high, or high school, or during vocational or university training. Secondly, when considering autonomy in the broadest sense, the answer to the question is clearly "no": the ability "to learn to learn" cannot be acquired on one's own (Famose and Margnes 2016). In fact, many of the strategies needed for learning to learn "require direct instruction", and "teachers must also facilitate their appropriation" (Famose and Margnes 2016, p. 277, author's translation), in other words, help learners to acquire them. And as Vygotsky and Bruner have shown so well, social interactions with more competent others are a necessary condition for developing autonomous thinking.

If teaching is about helping students learn, then should we help teachers to teach? This is a question to be asked urgently, at least if this quote mentioned by Thobois Jacob and Pélissier (Chapter 10) is to be believed: "The less we are taught, the more we learn."

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4 See definitions of learning to learn in the European Parliament and the European Union's Council's recommendations on key competences for lifelong learning in 2006 (2006/962/EC) and 2018 (2018/C 189/01).

5 A human helper may have intervened at an earlier stage to make its use as intuitive as possible, in order to facilitate learning by trial and error.

C.3. Helping teachers to teach

The issue of teachers' professional development, at the heart of Loisy's chapter (Chapter 7), is also addressed, more or less directly, by several other authors. For example, Gaborit and Lewi-Dumont (Chapter 3) show how teacher training can constitute an answer to the needs expressed by different actors involved in the inclusion of students with a visual impairment in junior high school; and Lédé and Pélissier (Chapter 6) propose a tool allowing teachers to question their own practice. Let us approach this question through an emerging topic: the accessibility of learning situations.

Thobois Jacob and Pélissier (Chapter 10), referring to Gerbault (2008), use the term proactive help, offered by the teacher before the learner starts working, and which aims to anticipate requests for help in order to allow the learner not to get stuck because of requests that wouldn't correspond to the learning objectives defined by the teacher. This solution shows some similarities to the logic of Circular No. 2017-026 of February 14, 2017, on specialized vocational training and the certificate of professional competence in inclusive education practices (Cappei) in France, which invites (special education) teachers to adapt learning situations to meet their students' special educational needs, with a focus on accessibility rather than compensation. Instead of compensating, i.e. providing opportune and tailored help in order to allow a given student to overcome a particular obstacle in the learning environment, teachers are thus expected to anticipate more, and redesign learning environments so that obstacles no longer appear.

But is it enough to promulgate a circular for teachers' pedagogical practices to change? Or should we help teachers to teach (here, to make teaching accessible)? In other words, if each teacher is seen as just another learner, can he or she become autonomous on his or her own (by reading the circular, for example), or does he or she need to be helped? It seems obvious that what we have considered autonomy in the strict sense above, i.e. an "increased" ability to perform a given task on one's own, without any exterior help, is not enough: the kind of autonomy needed by a "learning teacher" (understanding what is expected, planning and carrying it out in various teaching situations, evaluating it, etc.) goes beyond that.

This kind of autonomy refers, as we have seen above, to "learning to learn". Should we help learners to learn? For example, should we help them to ask for help?

C.4. Helping learners to learn

Obstacles to requesting help (Viriot-Goeldel, Chapter 1) and the misuse (e.g. underuse or overuse) of student help seeking (Burgues *et al*., Chapter 5), are

well documented by the authors of this book. Even though Viriot-Goeldel points to factors that may reverse this trend in the classroom (e.g. the quality of the teacher/learner relationship or the objective pursued by the teacher and its perception by the learners), Burgues *et al*. highlight a common methodological limitation in this domain: in fact, results are often based on data on learners' intentions to seek help and not on their actual help-seeking behavior. And yet, research has shown that in learning situations, learners do not necessarily accomplish what they claim to accomplish (see, for example, Winne and Jamieson-Noel 2002; Huet *et al*. 2016). In other words, if we are interested in learners' help-seeking behavior, it is necessary to observe it in actual learning situations, with and without digital technologies.

If we distinguish three types of help-seeking situations according to the type and location of the helper – the helper is a human who is physically present, the helper is a human communicating with the learner via learning technologies, and the human helper is replaced by a built-in support tool or help system (Puustinen and Rouet 2009) – observation of help seeking requires the use of video in the first case (see Zorn, Janin and Puustinen, Chapter 4), whereas in the other two cases, records of learner activity may be used. Burgues *et al*. (Chapter 5), for example, analyzed requests for help addressed to a remote human helper that were automatically recorded by the system.

Once we have enough knowledge about learners' actual help-seeking behavior in different types of learning situations, we will be better able to judge whether it is necessary to help them to seek help more effectively and, if so, how. Bellet and Mailles-Viard Metz (Chapter 8), for example, propose the idea of a "helping" scenario, inducing learners to adopt "good" practices in the self-regulation of their learning, through reflective work on the processes and variables supporting the implementation of a "self-evaluable" autonomy.

C.5. To conclude

To conclude, I will discuss some of the questions triggered by the reading of the preceding chapters.

First of all, why do we tend to limit our analyses to a dyadic teacher–learner relationship (or even to the behavior of a single member of the dyad), when the reality of teaching–learning situations is often much more complex? Chevry-Pébayle and Thobois Jacob (Chapter 9) provide a very good example, with the analysis of teacher–librarian collaboration. Gaborit and Lewi-Dumont (Chapter 3) discuss the role of teaching assistants for students with disabilities. And let us not forget that learners also learn from each other (see Bellet and Mailles-Viard Metz, Chapter 8)!

Secondly, is the learner-centered approach, which refers to self-regulation and help seeking, (that) different from the teacher-centered approach, which refers to hetero-regulation and help giving? In fact, Zorn, Janin and Puustinen (Chapter 4) consider that help seeking should not be seen as something unidirectional but as a flow between the student and the teacher. We should also consider the suggestion by Thobois Jacob and Pélissier (Chapter 10), that hetero-regulation and self-regulation are articulated within an interactive space.

Finally, are help and autonomy antinomical: once learners become autonomous, do they no longer need to be helped? Or do the two necessarily coexist …?

C.6. References

Famose, J.-P., Margnes, É. (2016). *Apprendre à apprendre: la compétence clé pour s'affirmer et réussir à l'école*. De Boeck, Brussels.

Gerbault, J. (2008). Interactions et aides: potentiel, pertinence et personnalisation. In *TICE et didactique des langues étrangères et maternelles: la problématique des aides à l'apprentissage*, Foucher, A.-L., Pothier, M., Rodrigues, C., Quanquin, V. (eds). Presses universitaires Blaise Pascal, Clermont-Ferrand.

Houdé, O. (ed.) (2003). *Vocabulaire des sciences cognitives*. PUF, Paris.

Huet, N., Motak, L., Sakdavong, J.-F. (2016). Motivation to seek help and help efficiency in students who failed in an initial task. *Computers in Human Behavior*, 63, 584–593.

Paul, M. (2009). Accompagnement. *Recherche et formation*, 62.

Puustinen, M., Rouet, J.-F. (2009). Learning with new technologies: help seeking and information searching revisited. *Computers & Education*, 53, 1014–1019.

Weil-Barais, A. (ed.) (1993). *L'homme cognitif*. PUF, Paris.

Winne, P.H., Jamieson-Noel, D.L. (2002). Exploring students' calibration of self-reports about study tactics and achievement. *Contemporary Educational Psychology*, 27, 551–572.

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