



School success and educational reforms: Why is it so difficult to increase the performance of our educational systems?

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Introduction

We are currently witnessing the globalization of educational reforms. In the wake of major international comparative studies (PISA, TIMSS), with nations competing to remain or become front-runners, educational reform systems have been springing up all over the world in the last twenty years. These government-sponsored changes are no doubt motivated by the best of intentions, and it would be entirely unfair to cast them as Machiavellian plots. Let us assume instead that they are inspired by a noble concern for the success of all students at school.

That said, to drum up support for the changes, the leaders and proponents of reform use lines of argument that A. Kessler, in his classical 1964 work entitled *La fonction éducative de l'école. École traditionnelle/école nouvelle* (the educational function of school: new school, old school), dubbed as rhetoric. Indeed, in their desire to promote the new pedagogy, its supporters have made a total caricature of traditional pedagogy, ascribing to it every imaginable defect which can, fortunately, be corrected by the virtues of the new pedagogy. Likewise, the development of educational reform leads to a need to criticize the system in place, to better justify the advantages of the suggested change. One of

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the possible consequences of this black-and-white rhetoric is that it reduces the old ways to mere caricature, stirring up vivid controversy. This is what seems to be happening in the education industry in French-speaking European countries where left-wing positions oppose right-wing positions, progressives go up against conservatives, and disciplinarians attack those they pejoratively describe as “pedagogists.” This is also what happened in Quebec when the reform was initiated in 2000 with the injunction to change from a teaching paradigm to a learning paradigm.

In this context of reform, it is extremely difficult – not only for the supporters or detractors of change but for anyone who takes an interest in the matter – to calmly discuss the proposals. One of the reasons for this is that we often mix up the ends and the means. We all know that the aim of education is a matter of public opinion, and in this sense, every opinion is to some extent valid. Anyone can embrace a particular idea and doggedly stand their ground, refusing to change their mind. These aims could be debated endlessly. When specific means to attain these aims are suggested, however, the issue is very different, because research and expertise are called to the table. We can prove that some means attain certain aims more effectively than others. It is on this particular point that we want to express our point of view: not all reforms are well-founded at the research level; they do not necessarily promote the best ways to reach the goals set out as desirable. Our intention here is to take a stance that does not follow the lines of the caricatured controversy of the left wing versus the right, the conservatives versus the progressives, or the disciplinarians versus the pedagogists. We regard these debates as pointless and counterproductive. For instance, we have seen the global reading method associated with the progressive left and the syllabic method of the traditional right, but choosing between them should be a matter of choosing an effective means to teach reading, not a political issue, whether one stands on the left or the right. We will therefore not support the progressives, since a new plan does not automatically bring better results, and we will not support the conservatives either, since the strategies of the olden days do not necessarily represent the golden age of pedagogy, that is, the best-ever teaching practices. In terms of the effects on learning, the old can be just as harmful as the new.

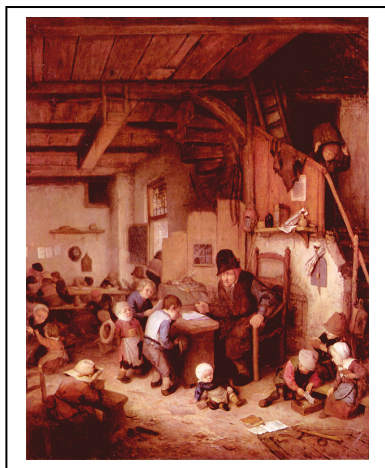
We want to approach the question of reform from a new angle, adopting the researcher’s difficult position that consists of patiently examining the efficiency of the

suggested means. In this regard, many in-class studies have been conducted for forty years, and we now have results that seem solid enough to allow us to rigorously study the efficiency of the suggested teaching methods. We are not starting from a position that favours any particular teaching approach; we only want to study the effects of teaching approaches on pupils' learning when it has been measured. We want to determine whether there are study results that are linked to positive effects on pupils' learning. Our question is as follows: What learning approaches are best at fostering learning? Or, put another way, how do they teach in schools where students are successful? In other words, what is the best pedagogical approach for the success of all pupils?

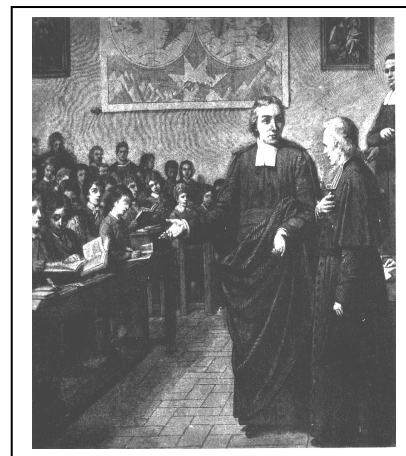
1. The pedagogy of the past

To answer this question and to gain a better understanding of the nature and issues of the present debates, we will take a long detour to clarify our concepts of pedagogy, pedagogical tradition, traditional pedagogy, and new pedagogy. These clarifications will help us understand the difference between traditional and new pedagogies, on the one hand, and the methods that research suggests provide the best results, regardless of the pedagogical tradition they belong to, on the other.

Let's take a look at the two images below (Parias, 1981). They both depict a 17th century school scene. The one on the left, which is a painting by Van Ostade, conjures up the school of his time. The image on the right is an engraving showing a class of the Brothers of the Christian Schools.



Picture 1: Van Ostade's painting



Picture 2: Brothers of the Christian Schools

Van Ostade's painting illustrates the class of an old schoolmaster looking gruff and sitting with the ferule in his hand. In front of him, a young pupil stands, hunched and fearful, probably afraid of what will happen if he does not recite his lesson perfectly. We also see a place that look nothing like a standard modern school. In the 17th century, it was common for schoolmasters to practise other professions in addition to teaching. They might teach in their basement or in a place where they carried on other businesses. We also notice that the room is in a state of messy disorder. There are all sorts of things lying about on the floor. At the back of the class, we see a pupil climbing out through the window. On the right, we see another one coming down the staircase with a basket on his head. There are not very many pupils, about fifteen in all. There are girls and boys of different ages. They occupy themselves separately: some play, others seem to be copying, reading, lazing around, and doing anything they please. This is what we call individual instruction, and it was the most common form of teaching at that time: the schoolmaster calls the pupils in turn and asks them to recite their lessons, and gets them to write and copy. It is individual instruction since the schoolmaster sees the pupils one at a time. Obviously, this schoolmaster had no training: in those days, whoever knew how to read could teach how to read. This is why we use the term "makeshift schoolmaster."

The image on the right shows such a radical change of setting that it looks as if it comes from another era. Yet it also is from the 17th century. What happened? How can these two classrooms from the same period be so different? Our hypothesis: we are witnessing the birth of pedagogy. The room on the right has become specialized – what we now call a classroom. A classroom has only one purpose: education. We also observe that the space is controlled: the desks are aligned and all the students are sitting in an orderly manner in their designated places. The room is specialized in that it possesses a map in two hemispheres – as there is in almost every elementary classroom around the world – on either side of which are hung pious images to enlighten or frighten the students. We see that all the students have an open notebook or textbook, probably all turned to the same page. The invention of the printing press, just before the 17th century, made it possible for students to each have a copy of the same book. For the first time, the idea of simultaneous teaching appeared in small schools, since the teacher could use the same book to teach everyone at the same time. We also notice in the picture that there are three teachers. The

Brothers of the Christian Schools, a teaching community, were training their novices to become educators. One of these instructors is probably a young teacher being supervised by his more experienced colleagues. In short, a series of changes in education occurred during the 17th century. We define these changes as pedagogy. Why did this happen at that time in particular? There are without doubt many reasons, and we shall examine four of them.

The Protestant Reformation

Luther criticized the Church in his day, which was corrupt. Members of the clergy were not all necessarily good models of morality. He particularly attacked the indulgences system, which gave rise to abusive interpretations of the Scripture by the clergy. He concluded that instead of relying on these sometimes untrustworthy intermediaries, people should interpret the Bible for themselves. This injunction had a big impact, since for people to be able to read and interpret the Scriptures, schools had to be opened to teach the people to read. In other words, Luther and Protestantism brought education to disadvantaged children and prompted the construction of new schools.

The Counter Reformation

With Protestantism spreading and gaining in popularity, the Catholics could not afford to sit still. They took many measures to counter the phenomenon, including creating the famous Jesuit Colleges. The mission of the Jesuits, who were called the knights of Jesus, was to fight Protestantism. The Catholic Counter Reformation thus opened new schools and made education more accessible to children.

A new idea of childhood

Children have not always been perceived the same way. During the 16th century, for example, children were seen as charming toys. It was the cute period. Children were pretty, charming, amusing and pleasant, but their upbringing was not a matter of concern for their parents. They mingled with adults and were not given any special care. In the 17th century, the perception of children changed, in a negative way. Since they were dominated by their passions, children were considered to be bad. It was believed that they should submit to reason and learn to behave reasonably. Childhood had to be controlled, corrected. But

childhood could not be completely corrected if the child remained with the family. Children were therefore separated from their families and confined to places called schools.

Problems of delinquency in the cities

Cities, particularly in Europe, began to expand. Vagrant and noisy youth, creating havoc and disturbing merchants, started to be a problem. Charles D'Émia came up with a brilliant solution: "Opening a school means closing a prison." If those delinquent, noisy, disruptive youth were put into schools, the cities would become calmer. So in one sense, delinquency in the cities stimulated the construction of schools.

In a relatively short time, the combined effects of these four factors (Protestant Reformation, Counter Reformation, new idea of childhood and delinquency) sent more children to school and led to the creation of new schools. But a new problem arose: the only pedagogy used at that time was individual instruction. If individual instruction was used while the numbers of student grew, problems in the classroom would soon be overwhelming. Individual instruction can work with five to ten children, but it cannot be applied in a classroom filled with a hundred students. This was the case for Jacques Batencour, an educationalist in Paris at that time, who described the difficulties he had in his classroom. With a hundred students, it was impossible to call them one by one. The growing numbers of students in schools and the inherent problems this caused compelled teachers to find a solution to these problems. We call this solution pedagogy.

1.1. Definition of pedagogy

Pedagogy is a discourse and a system of order for teaching and educating groups of students. Disorder must be avoided, as shown in the painting by Van Ostade, and order must be created. Masters of education and teachers in the field – Catholic and Protestant alike – wrote treatises on pedagogy during the 17th century to describe how teaching should be carried out to maintain order in the classroom and provide a group of students with an organized education. The discourse on pedagogy began when the number of students began to grow. So when we say that pedagogy is a discourse and a system of order, we mean a discourse and a system of order for managing a group of students. Without a group of students, there would be no need to invent pedagogy. Education was not yet the mass

teaching that appeared in the 19th century, after the adoption of laws for mandatory, free education, but even in the 17th century, there were enough students to force a change in educational methods.

What is pedagogy? It is a method that calls for orderly process. A close examination of treatises on pedagogy reveals that this order is found in every facet of life in a classroom: everything is controlled, timed and organized. For example, time is controlled. In 17th century pedagogy treatises, time was carefully divided, from morning to night. The whole day was elaborately divided in fragments of three or four minutes. Space was also controlled: the desks were well-aligned. No bit of space was left to chance; every child had a specific, assigned place. Movement was only permitted by rows and upon certain signals. Posture was controlled, too, by creating a strict code: how to hold a pen, to sit, to pray. There was also a control on rewards and punishments, which were rationalized, meted out in accordance with a graduated order. Finally, knowledge was controlled, consciously dissected from the simplest to the most complex. Our hypothesis that pedagogy was born in the 17th century does not mean that all its mechanisms were created then. On the contrary, we are suggesting that this was when a set of mechanisms, some of which no doubt existed before that time, was systematically implemented in order to teach and share knowledge with bigger groups of students. The pedagogy that was introduced at that time was a complete system arranged to control every facet of classroom life.

1.2. Pedagogic tradition and the traditional pedagogy/new pedagogy debate

Beginning at that time and continuing through the centuries until today, a real pedagogic tradition has gradually been established, that is, a common way of teaching. Teacher training, which didn't exist before this period, is an important component at the root of this pedagogic tradition. Largely through religious orders, such as the Brothers of the Christian schools, Jesuits and female teaching communities, a more-or-less uniform teaching method developed. This European way of teaching then spread all around the world.

But this pedagogic tradition also involved mistakes and abuses. As time went by, various criticisms were levelled at its methods: such as teaching reading before writing (rather than simultaneously), learning Latin before French, and even authoritarianism and

child abuse, etc. Criticism was particularly harsh in the 20th century. Freinet, Montessori, Neill, Freire, Skinner and many others come to mind when we talk about people who have denounced the pedagogic prescriptions stemming from traditional teaching methods. Despite their considerable differences, they all shared the same enemy: traditional pedagogy. The words were reversed and pedagogic tradition became traditional pedagogy, with all the pejorative connotation that is now attached to this expression.

This united charge against their common enemy allowed many authors to put forth their opinions. Their new pedagogies oppose the methods of the old pedagogy almost word by word, claiming the components to be all wrong. By way of a crafty rhetorical trick, the virtues are now all lined up on the side of the new pedagogy, and the drawbacks are all grouped together on the traditional side. For example, while the Jesuits claimed in their *Ratio dicendi et docendi* (Jouvençy, 1892) that “the mind of a child is like a narrow-necked vase,” the new pedagogy critique has twisted that quote to say “the mind of a child is like a jug to be filled.” A narrow-necked vase and a jug to be filled are two very different perspectives! While the first is based on discernment, the second denies any judgement on the part of the teacher. In other respects, the partisans of new pedagogy were absolutely right to say that the needs and interests of the child have to be taken into consideration. But their critics accuse them of promoting the capricious child-king, ever in control of his parents, which is quite another matter.

Our goal here, after this long detour, is not to try to justify either traditional pedagogy or new pedagogy. We needed to explain how pedagogy established itself as a tradition and how new pedagogy has usurped the place of traditional pedagogy using Manichean rhetoric.

The current situation with educational reform works the same way as the struggle between new pedagogy and traditional pedagogy. Like the exaggerated, oversimplified criticisms offered by proponents of new pedagogy, current debate on educational reform repeats the same age-old abuses. It appears that the debate is on the wrong track or is even hopelessly disoriented. The discussion must be started again on a new footing, and we suggest using educational research as our basis for reflection.

2. Research on effective teaching and schools

In the 1960s, researchers such as Coleman, Bourdieu, Passeron, Baudelot and Estabiet posited that everything was decided outside of school: family background and social environment appeared to be the primary factors in the students' academic success or failure. Despite the relevance of these works, they neglected the important role of teachers and schools, the dynamics of which they knew nothing about. An impressive number of studies were conducted subsequently in classrooms starting in the 1970s, mainly in Anglo-Saxon environments. These studies sought to link what teachers do and think with their students' academic success. The researchers went into classrooms in different socio-economic environments; they systematically observed the methods of beginner, experienced and expert teachers. From inside the classroom and the school, rather than outside, as in the studies done in the 1960s, they were better able to define what the teachers did and how they thought, and to connect that with the students' academic success.

They realized that the teacher makes a difference: that the teacher is an important factor in the students' academic success or failure. There is a *teacher effect*, which has been documented, and also a *school effect*, in the sense that in similar socio-economic environments, there are variations in teaching methods and academic success. In similar socio-economic environments, different schools achieve different levels of academic success. In some schools of poorer socio-economic environments, students do better in school and, conversely, in wealthier socio-economic environments, there are some schools where the students do worse than they should.

Why is this so? We believe that teaching can explain this difference in achieving success. Our thesis is as follows: the numerous empirical studies that we examined suggest that approaches we will term "instructionist" (where the teacher systematically makes the student learn specific core content) are more effective than those that focus on discovery. Let's support this thesis by examining several of these studies.

2.1. The *Follow Through* project

The *Follow Through* project was launched in 1968 in the United States and came to an end in 1995. Initially, the project was supposed to be a follow-up to the *Head Start* program, which provided social, health and educational services to

preschool children from disadvantaged backgrounds and their families. The purpose of the *Head Start* program was to break the cycle of poverty, and the project was well accepted in the communities. A study revealed, however, that the children's gains largely disappeared when they entered school. The *Follow Through* project was originally designed as a service and was supposed to take over from the *Head Start* program. But the project had to be reconceptualized right at the beginning because of budget cuts. It was transformed into a longitudinal study to measure the effectiveness of pedagogical approaches with students from disadvantaged backgrounds, from kindergarten to third grade. Between 1968 and 1976, around 10,000 students from 120 communities were involved in the study each year. Subsequently, the program continued on in the form of services until 1995 (Watkins, 1997).

Proponents of different pedagogical approaches were asked to introduce these approaches in schools and to provide educational materials as well as training for the teachers. Other schools were matched with the experimental schools and used as control groups. Student academic achievement was measured on the basis of core learning (reading, writing and arithmetic), cognitive skills, namely problem solving, and lastly, emotional dimensions, i.e., image and self-esteem. The methods were unanimously approved by the different proponents involved. The following figure gives an overview of the results.

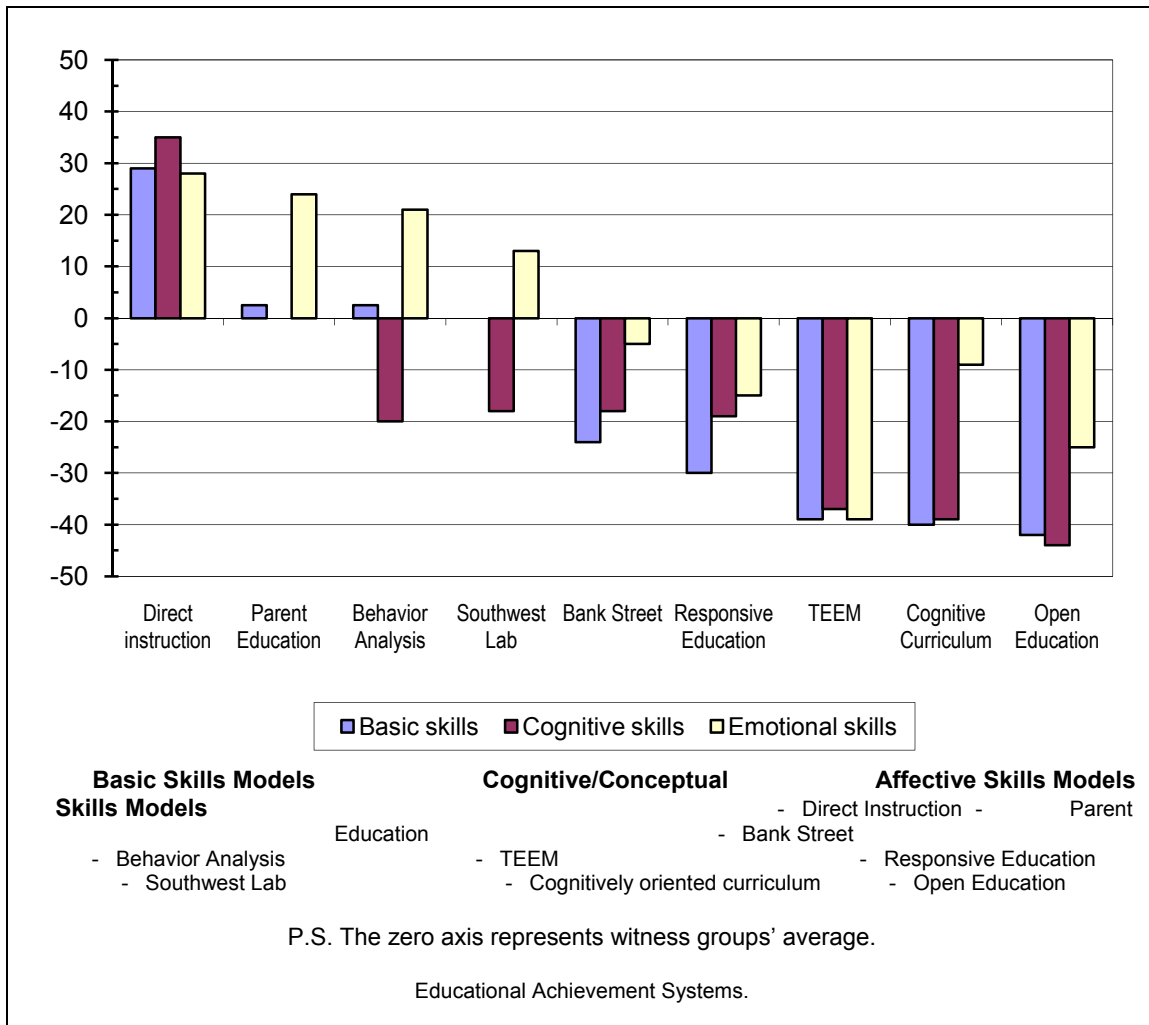


FIGURE 3: COMPARISON OF ACADEMIC PERFORMANCE OF NINE PEDAGOGICAL MODELS USED FOR THE FOLLOW THROUGH PROJECT

Figure 3 shows the nine pedagogical approaches that were compared based on basic and cognitive skills, as well as emotional dimensions. These pedagogical approaches were divided into three categories based on whether they concentrate most on basic skills, more complex cognitive skills or emotional dimensions. The horizontal line labelled zero, which dissects the table, represents the control group—i.e., the classes that did not receive specific instruction and served as a comparison standard.

The results are spectacular. The performance of the *Direct Instruction* model is shown on the left. This pedagogical approach is characterized by a well-structured,

sequentially organized curriculum and pedagogical strategies that embrace a simple-to-complex type of instruction. The *Direct Instruction* pedagogical model strongly affected core learning of cognitive skills as well as social and emotional dimensions. In contrast, other models, such as *Open Education*, at the right side, had a weak impact on core learning, cognitive skills and, paradoxically, emotional dimensions, despite being their main focus. On the contrary, *Direct Instruction*, with no affective objectives in the first place, got the highest affective marks among all models! How can this be explained? It has been suggested that self-image does not really improve when students work on it directly, but rather when they succeed. In this model, academic success strengthens the students' self-image and self-esteem.

Some may argue that this is a single study and that it was carried out in the 1970s, so it is essential to find more recent works. Of course, if there was only one study, it would not be sufficient—but such is not the case. Several other studies have shown the effectiveness of *Direct Instruction*. The *Wisconsin Policy Research Institute*, for instance, analysed 20 years worth of research on the *Direct Instruction* model and proved its effectiveness. In their 1999 analysis of 20 pedagogical approaches, Herman *et al.* also confirmed the effectiveness of *Direct Instruction*. In 2003, Borman analysed 232 research studies comparing 29 pedagogical models and established that the pedagogical approaches associated with the best student performance are *Direct Instruction* first and Robert Slavin's *Success for All* program second. *Success for All* consists of a well-structured pedagogical method that promotes a cooperative approach with students and relationships with parents. A number of other meta-analyses also suggest that structured, explicit teaching is more effective than teaching by discovery. For instance, the *National Reading Panel*, in its extensive summary report on reading, published in 2000, revealed that students learn better through analytical, systematic methods than through global methods. Baker, Gersten and Lee's research synthesis on mathematical research (2002) and Gersten and Baker's (2001) on writing come to the same conclusion.

Both Swanson & Hoskyn's (1998) research synthesis, which included no fewer than 180 studies conducted among primary school students with difficulties, and Swanson's (2001) study, which was based on secondary school students with disabilities, drew the

same conclusions. Their results indicate that the effectiveness of instructionist approaches can not be seen as an isolated phenomenon, but as a strong trend in education.

2.2. Characteristics of effective teaching (explicit, direct, structured)

This brief overview of research studies leads us to support the idea that when it comes to academic success, a systematic, structured and explicit form of teaching, which moves from the simple to the complex, is more effective than teaching by discovery. Despite the differences between the “instructionist” models (*Direct Instruction, Success for All, explicit teaching, etc.*), these different approaches embrace strategies in some ways similar to what Rosenshine and Stevens (1986) called a “general model of effective instruction.” Drawing on a number of empirical studies, these authors identified six useful key points for teachers: 1 – daily review; 2 – presentation, i.e., the way content is presented; 3 – guided practice; 4 – correction and feedback; 5 – independent practice and; 6 – weekly and monthly reviews.

Daily review

Any teacher who gives students homework without correcting or reviewing it in class is likely to find that the students lose interest in this activity. Sooner or later, the students stop doing it or stop making the necessary effort. The homework strategy loses its impact, when it could help achieve a higher automation level in some skills. Likewise, teachers should not give homework that the students will not be able to successfully finish. Homework should relate to content the students already know, with the aim of improving fluidity.

When teachers plan to introduce a new element of knowledge in a lesson, they should review the knowledge and skills required to learn the new content. This review of earlier learning is important because it reactivates the students’ memories and facilitates their access to knowledge they will need to grasp the new teaching.

Presentation

When presenting new materials, teachers should clearly state the objectives of the lesson. They can give a brief summary of what the students will see. They can also demonstrate the procedures, i.e., perform the task in front of the students while “thinking aloud.” The content should be presented in small steps, moving from the simple to the complex to keep the level of difficulty in check. Starting with an idea in its full complexity makes it much harder for the students to learn, while if the teachers control the difficulty of the lesson, they will meet with greater success. For instance, when presenting a concept, the teachers can give examples as well as counterexamples. Counterexamples help strengthen the understanding of the definition. Teachers should be constantly assessing the students’ understanding by asking questions. Teachers who use an explicit, direct and structured approach ask questions and constantly canvass their students’ understanding. This is why some people mistakenly say that with this type of approach, the students are passive. On the contrary, they are continually challenged and the teachers are always watching the students’ reaction to the lesson content. A number of studies have also revealed that teachers should avoid digressions as much as possible. Focused teachers who concentrate on the task at hand seem better able to further their students’ success than those who constantly stray from the topic, jump from one subject to another, and end up losing their momentum. Behavioural problems are more likely to surface when the students are not working.

Guided Practice

Guided practice is an essential pedagogical strategy, but unfortunately, many teachers do not spend enough time on it. In guided practice, once the teachers have given an overview of the task to perform and demonstrated what the students must do, they let their students work. During that time, instead of staying at their desks, they walk around the classroom and watch how the students are coping with the task, to see how well they have grasped the message. Working in teams makes this even easier because it allows the students to assess their own understanding in discussions with their peers. Too often we think that people understand perfectly well what we say. But there is a world of difference between what teachers teach and what students remember. Walking around the classroom during the guided practice allows teachers to gauge the students’ degree of understanding,

ascertain the number and type of mistakes they are making, and determine whether the misunderstanding is limited to a few students or spread through half of the class. If the confusion is widespread, the teacher stops everything and explains further, to ensure the mistaken understanding does not become entrenched. Crystallized mistakes take much longer to correct, so it is better to identify mistakes as soon as possible to avoid wasting precious time.

In addition to questioning the students a lot, it is important to give them procedural prompts. In *Cognitive Strategies Instruction that Really Improves Children's Academic Performance* (1995), Pressley and Woloshyn offer various strategies, validated through research, that can help students accomplish their tasks. For example, to help students compare one thing to another, the teacher can give them a sheet with two columns and comparison points to facilitate the comparison.

Procedural prompts guide the students and make it easier for them to understand and execute the assigned task. During the guided practice stage, it is important to ensure that everyone participates and to make them practice until a high success rate (80%) is met. If necessary, teachers can give additional explanations until the students have perfectly mastered the material.

Feedback

The importance of feedback has long been recognized. Teachers can give feedback gradually when students' answers are right but still hesitant. They can give more consistent feedback or even repeat the lesson when the answers are wrong. They can also provide students with self-verification lists so they can monitor their own progress.

The studies also recommend using positive reinforcement in moderation, as at some point, too much reinforcement and congratulation can become useless or even generate negative effects. The positive impact of reinforcement can be distributed over an upside-down, U-shaped curve, with performance improvements at the beginning, followed by a decline.

Independent practice

At some point, the students have to become self-sufficient, so it is important for them to get enough practice to achieve an acceptable level of success. In independent practice, the teachers constantly observe the students' performance to make sure that mistakes do not become internalized and widespread. They should start by giving an overview of the required task and offering support. Then the students practise (if appropriate) until they achieve automation, that is, a success rate of 95%. The teachers supervise the independent practice and remind the students that the work will be corrected. They also use drills to help slower students.

Weekly and monthly reviews

It is important to often go over what has already been taught and to reteach what has not been mastered. The issue of transfer has been discussed at length for many years now. What must be remembered is that there can be no transfer unless the knowledge has been acquired and retained. "Acquired" means that the knowledge is well understood, and "retained" means practised enough so that it can be accessed when needed. A systematic review of what has been taught, frequent evaluations and, if necessary, further explanations of what has not been mastered will facilitate both acquisition and retention and make transfer possible.

2.3 Weaknesses of conventional teaching and teaching by discovery

Weaknesses of conventional teaching

It is important to understand that Rosenshine and Stevens' model (1986) is not the same as conventional teaching. Unfortunately, people frequently think that it is. Conventional teaching encompasses a number of weaknesses that should be exposed. We will examine them based on Rosenshine and Stevens' six-point model.

Conventional teaching provides few reviews of previously learned knowledge. The objectives are not clear, and demonstrations are not used often enough. Moreover, insufficient time is devoted to guided practice. Teachers make their presentation and then

set the students to independent practice, allowing time for errors to stick in the students' minds. Too little feedback is given, too late. After an evaluation, when the teachers discover that the students have performed poorly, they tend to blame the students. From this perspective, the failure is the fault of the children, not of the teacher who taught badly, did not spend enough time on guided practice, did not review, and did not clearly establish the learning objectives.

Weaknesses of teaching by discovery

Teaching by discovery, which is often project-based, is an interesting idea motivated by good intentions. Yet attempting a discovery strategy too early or too quickly—especially when the students have not acquired or assimilated enough basic knowledge—can result in serious pedagogical failure.

In the discovery method, care is not always taken to ensure that the students have fully learned and mastered the prerequisite knowledge. Most of the time, teaching by discovery does not start with a simple-to-complex sequence, but rather begins immediately with complex tasks. Because there is no control over the level of difficulty inherent in the project, the students are not necessarily able to do what the teacher asks of them. Constructivism's interest in guided practice was to assess the students' level of understanding and question them extensively. This contributed enormously to our understanding of the phenomenon of learning. But discovery approaches do not place enough emphasis on the importance of practice. There is a tendency toward fragmentation and skimming, even though the students like to do projects. But the criterion for success should not be that students enjoy themselves; it should be that they learn what they are supposed to learn. Having fun is a positive side effect, but it cannot be the school's main mission. Many people feel—or adamantly believe—that teaching by discovery and the project-based approach are good strategies for teaching children. They cannot bring themselves to ask whether these measures are as effective as they think they are, and whether they are really associated with better student learning. When children fail, rather than questioning the teaching strategies used, they cite the teacher-student ratio or the lack of time and materials, and they often place the blame on insufficient teacher training.

TABLE 1: WEAKNESSES OF CONVENTIONAL TEACHING AND TEACHING BY DISCOVERY

	Weaknesses of conventional teaching	Weaknesses of teaching by discovery
Daily review	Little review of prior knowledge	Teachers do not make sure students understand and master prerequisite knowledge
Presentation	Unclear goals, little demonstration	Not from simple to complex (complex tasks) Little control over the level of task difficulty
Guided practice	Little time allotted to guided practice and a lot to presentations. Assumption: students remember exactly what was said	Good assessment of the student's understanding of the subject, but little sustained practice; tendency toward fragmentation and skimming
Feedback	Too little feedback, given too late; crystallization of mistakes	Little immediate feedback, crystallization of mistakes
Independent practice	There may be lots of practice, but mistakes are fixed in the students' minds because of insufficient guided practice	Tendency to skim over the content; mastery and automation are not achieved
Daily and monthly reviews	Many tests	Variable
Failure	The child's fault	Improper implementation, too many students, not enough time or resources to achieve good results

2.4. Studies on effective schools

The field of studies on effective schools is an area of research that developed, strangely enough, in lock-step with the study of effective teaching—as if the results in one area were not able to influence the methods and results in the other. Over the years, the results of studies on effective schools have been almost the same from one study to the next. The common, predominant factors that constantly recur in effective schools are: 1- strong leadership from the school administration; 2- high academic expectations for all students; 3- a respectful and orderly atmosphere; 4- priority given to basic subjects; 5- monitoring of students' progress.

Teddlie's studies interrupted what seemed to be turning into a vicious circle (Teddlie & Reynolds, 2000). Rather than examining only the characteristics outside the classrooms in effective schools, this researcher and his colleagues chose to focus their attention on teaching practices in effective and ineffective schools. Using an observation tool based on

Rosenshine's work, these researchers observed classroom practices and noted that the pedagogical practices used in effective schools were different from those in ineffective schools. Their work revealed that effective schools rely on structured and explicit teaching methods.

Furthermore, in their large study for the *International School Effectiveness Research* project, Reynolds and his colleagues (2002) compared schools in nine countries using both quantitative and qualitative tools. They observed that in effective schools in different countries, teachers taught in a similar way, using a structured, systematic form of instruction and practices associated with effective teaching. The researchers concluded that there are “universal” factors related to school effectiveness, factors that transcend the contextual differences specific to each country. Their conclusion definitely set a cat among the “situationist” pigeons!

Conclusion

We are not in favour of a specific pedagogical approach. Whatever the nature of the proposed methodology, our interest is to determine whether a research base exists and whether the effects of the methods have been measured. Based on the many studies we have examined, we believe that structured teaching offers more potential than teaching by discovery as a basic pedagogical approach to ensure the success of both the students in a class and the entire school—particularly in disadvantaged environments. This is how research into teaching methods can help make schools more democratic.

And yet, paradoxically, current educational reforms recommend teaching by discovery. For instance, in Quebec, at the beginning of the reform, proponents were saying that schools had to move from the paradigm of teaching to the paradigm of learning, as if we had made a major pedagogical breakthrough. But how can radical pedagogical changes be justified with so little empirical evidence? How can they claim the reform will help more students succeed when they already know that many—undoubtedly more than before—will actually fail?

The reasons behind these choices probably lie in the fact that our education system has been taken over by the pedagogical righteousness of a *pedagogical establishment* devised by politicians in search of recognition, dominated by trend-conscious civil servants,

and influenced by academics in educational science who rely on theory and essays rather than rigorous research.

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