

STUDY FILES: AN INVALUABLE RESOURCE FOR LEARNING

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Nadia LAFLAMME teaches math at the CÉGEP de Lévis-Lauzon, and is currently working on a Master's in Education under the auspices of the PERFORMA [professional development and training for college teachers] program. She previously taught at the CÉGEP de Thetford, where, with colleague Benoît Régis¹, she became more interested in student learning and active-teaching methods. More recently, inspired by the work of France Côté, she has developed a study file she uses in various math courses; in this issue of *Pédagogie collégiale*, she shares her considerable enthusiasm for this innovation.

PÉDAGOGIE COLLÉGIALE:

What is the study file?

NADIA LAFLAMME:

The purpose of the study file is to help students learn and prepare for exams. It's composed of an exercise book—generally containing problems to be solved—selected by each student in keeping with the textbook and course content specified in the monthly calendar². Students make their selection based on certain criteria: the exercises must be relevant to them, exam-level in difficulty, and challenging. The exercises must be done correctly and accurately, and their source, identified. Students must also draw diagrams summarizing various theoretical dimensions they find harder to master. They then place all study-file components in a duo-tang or folder.

I use study files primarily in math and humanities courses; I also used it once with the natural sciences. I hope to implement it shortly in an upgrading course where, I believe, it will be extremely useful in developing students' learning strategies.

What gave you the idea for the study file?

nl The idea came to me while I was attending a lecture given by France Côté at the 2006 AQPC symposium. I was looking for a way to help promote deep and structured learning. Previously, I would mark my students on weekly homework assignments and frequent mini-tests. Unfortunately, this method never resulted in deep or meaningful learning: most students would prepare at the last minute, giving the course content a cursory once-over, tentatively rather than systematically solving problems, and quickly forgetting content that should already have been mastered. Although obviously there were several students who performed very well, I wanted the same outcome for

all my students, not just the best. The knowledge gaps that characterized many of my math students also showed little signs of improvement during the semester, and the students' questions and deliberations often revealed that their learning strategies were sorely lacking.

Did you refer to any works or individuals in developing this project?

nl It was really after reading works by France Côté on the subject (Côté, 2009; see also Côté, 2005) that the proverbial light bulb went on and I decided to experiment with the study-file concept. France Côté teaches physical-rehabilitation techniques, and what she generally requires of her students is generally more tangible than math skills. Transposing the study-file approach into my own discipline was thus not easy to do, but I put my experience and imagination to work. That being said, I would be remiss if I failed to underscore the support I received from Andréanne Beaulieu and Marilyn Nadeau, both educational advisors at my CÉGEP. They offered invaluable advice and suggested a number of other readings, especially as regards study-file evaluation.

How did you go about the process?

nl In the summer of 2009, I began giving the matter more thought and decided to experiment. In the fall of that same year, I was teaching differential calculus to natural-sciences students (first session, first year) and integral calculus to humanities students (third session, second

¹ *Pédagogie collégiale*, 21(1).

² This calendar, which is distributed to students for each step of the semester, contains details on the contents of each course, the accompanying exercises, assessments, and so on



year). I had to determine file content and develop a tool for properly evaluating assignments, while weighting the workload and bearing in mind the fact that I was conducting an experiment. At the outset, the weighting was 5%; I had to trust in myself and sell the concept to my students, getting them on board without compromising my goals.

At the end of the semester, my students' comments encouraged me to continue with the experiment and raise the weighting from 5% to 10%, so as to better acknowledge the work involved. For the same reason, I intend to increase that figure to 15% in the future.

All the improvements, changes, and enhancements I made to the study file are the result of my students' comments and the trials I conducted on the basis of those comments.

What tasks do the students have to perform?

nl Students choose about 20 exercises from among those listed in the monthly calendar in order to cover all concepts involved in each of the course's three sections, meaning they accumulate a total of 60 exercises by the end of term. Making relevant choices—i.e., significant choices in line with their own difficulties and the exam's level of complexity—enables students to think critically, which contributes to metacognition. They must also create one or two flowcharts (concept maps) based on theoretical course concepts for each of course section.

What makes me very proud of my students is seeing how much progress they make over the term. I'm no longer just a math teacher, but an educator in the broadest sense of the term.

Depending on their individual learning problems, they can also add corrected exercises, summaries, and sheets of frequently made errors (sheets divided into two columns, one containing the error and the other, the correction). By providing rapid access to information on a single page, this arrangement allows students to see the error and the correction as a whole, and retain it in their memory as a single unit so they can avoid constantly making the same mistakes. The "golden rule" behind file preparation is that they are doing something useful and helpful for themselves, not merely doing another homework assignment for me.

Furthermore, at the very beginning of the semester, I have them think about their knowledge in relation to learning strategies. In the middle of the term, I have them complete

a self-assessment questionnaire; at the end, they are required to examine their progress and reflect on their learning strategies. This approach, which measures progress, involves relatively easy questions that bear on students' relationship with learning. For example, I ask how the study file has enabled them to improve their learning strategies, what factors helped them pass the course and how the study file is relevant.

How do you evaluate the study file, and how much time do you spend doing so?

nl I use a marking grid with criteria that allow me to provide students with pertinent feedback. These criteria measure compliance with instructions in terms of the number of components (exercises), file organization, degree of correspondence to the overall content of each course section, exercise difficulty level, and solution consistency and wording quality, which together represent 60% of the evaluation. The other portion deals with mapping, which is assessed in keeping with theory.

I correct the files three times per semester, spending some 20 minutes on each file. Students have their file in hand for studying, and turn it in for correction just before each exam. While the process certainly takes time, I feel it represents a worthwhile investment in their learning—not to mention the fact that it improves our relationship. From a more pragmatic viewpoint, study files enable students to avoid making the same mistakes throughout the entire session, and, as such, may help save time (both theirs and mine!).

I also conduct more informal checks (i.e., formative assessments) throughout the term, especially during the first few weeks, so as to provide students with guidance based on their needs. They then have more confidence in themselves, and such checks become shorter and less frequent.

What do your students think of the study file?

nl The students almost always start out thinking of the process as an extra burden and a waste of time. That's particularly true of the strongest students, who can't see the point in redoing exercises and writing down how they solve problems, given that they already understand. I know this group just goes along to earn marks.

However, once they've taken the first mini-test and I've done my formative assessment of the file, they "get it"—especially the ones who are having problems. Several realize



they have not properly understood, and that the contents of their file are directly related to their grade. I take the time to go over everything with them, mentioning possible improvements and confront their difficulties while at the same time encouraging them. This personalized approach truly makes them aware that their file will help them learn. Moreover, my role changes in their eyes: I become someone whose goal is to make sure they succeed. Because they know I can conduct a formative assessment at any time, many take advantage of this assistance in order to improve and master the material, not just to get good grades.

There are often students who grumble about the file the whole term. Some can't properly evaluate its usefulness or relevance until the last week of the course, when they're preparing for the comprehensive examination. At the end of the semester, even the strongest ones occasionally realize they are incapable of solving problems they actually understood at the outset, and begin making the most of the information in their file. For still other students, the usefulness and relevance of the study file becomes obvious only in the following semester, with the benefit of hindsight.

Students who are familiar with the study file speak of it in glowing terms to their classmates. As the message seems to be getting across very well, I intend to make video clips with my "converted" students and show them to new ones.

As a teacher, what satisfaction do you get from seeing students use the study file?

nl What makes me extremely proud of my students is witnessing their progress throughout the session. I'm no longer just a math teacher, but an educator in the broadest sense of the term. When I was taking a course with Michel Poirier at the Université de Sherbrooke, he wrote: "The accent placed on knowledge is not enough, as the mastery of learning strategies is an integral part of learning. When we absorb a disciplinary concept, we are also learning how to learn." These two sentences best represent what I am trying to accomplish with my students. With the skills-based approach and ensuing reflections on learning, teachers can no longer afford to be mere specialists in a certain area; they must go beyond prescribed concepts to equip their students with specific means of learning. At the end of a course, I now have the impression that, not only have I given out grades, but I've actually helped my students get organized, structure their learning, differentiate between an exam-level exercise and a pre-exam level exercise, and determine which concepts are vital and which are complementary. Moreover, students are more independent and responsible by the end of term.

From a learning standpoint, what are the advantages?

nl For most students, learning is deeper. Flowcharts enhance their comprehension of the concepts involved, which they see less as disjointed and more as interrelated. They're also able to discuss their learning strategies and are more critical of themselves. They don't just learn math concepts; they learn how to learn—a fact that, for me, is one of the greatest advantages of using the study file.

Thanks to the study file, I have a real teacher-student relationship with my students that is both fulfilling and rewarding.

Has the file influenced the course success rate?

nl At the moment, there's no difference between the success rate for classes that use the file and those that don't, but, despite everything, I continue to feel, perhaps idealistically, that the benefits of the study file lie more in learning quality and the development of study techniques. Often, a student who fails the course will tell me he still learned a lot, and the course was not a waste of time. As I said earlier, I've personally gained a lot from implementing this tool, thanks to which I have a real teacher-student relationship with my students that is both fulfilling and rewarding.

Are there limits to study-file use?

nl Three-hour courses where I see students only once a week likely aren't as well suited, since the way I use the file requires considerable supervision. To justify using the file, it's better that the course be demanding in terms of complexity. The teacher also has to have the time for meeting with students and correcting the exercises.

What advice would you give colleagues who wanted to experiment with the study file?

nl I'd tell them to bone up on the literature, especially the work of France Côté, but not to worry about conducting an exhaustive survey. Mainly, I'd say to start out with a small-scale trial, so as to avoid radical changes, either for themselves or their students. I'd tell them to go for it; it's completely worthwhile! ♦

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