Beyond Statistics

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Paul Emmanuel Silué and **Luckson Junior Vilus** are graduates in Computer Science Technology from Cégep Garneau, and are both pursuing university studies in computer science.

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"Hey teacher, are we numbskulls?" This surprising question was asked by my students with a smirk, but also with a slightly downcast look, signalling "we ask in jest, but not really." Since it was probably too embarrassing, two of them came to ask.

I don't remember my answer; it was probably a canned repartee, given the cognitive overload of the end of the course and the fact that it was a good curveball. As a teacher, I sometimes have these boilerplate answers that—like astrological predictions—are just vague enough to apply to a thousand situations. But when the chaos of the course was over, I felt like I'd missed something. Besides, what does it mean to be a *numbskull*?

We sometimes forget how much courage it takes to ask a teacher a question about something other than the chart on page 22 of the course notes. Feeling guilty of having extinguished a spark of student courage through a lack of availability, I suggested to the two students that they take the time to revisit the question.

Jean-Philippe Boucher - First of all, thank you, guys, for accepting the invitation and taking some of your precious time between your internships and your program integrative assessment to chat with me and revisit your famous question. By the way, what was it again?

Paul Emmanuel Silué – Are we numbskulls?

JPB - I'm going to need a definition of a numbskull, because even after searching the Internet, I'm not sure I fully understand what it means in this context.

Luckson Junior Vilus - In the school context, numbskulls are behind on the others, or less knowledgeable.

Paul - It's not someone who can't do things, but someone who's a bit lost, who tags along and doesn't always understand what's going on and what's coming.

JPB - Thanks for the clarification, but I'm a little surprised that you feel that way. Before we go any further, can we go back in time a bit and talk about your transition from high school to college?

Luckson - I didn't know what I wanted to study at CEGEP, and at the registration deadline, I enrolled in Science. I thought it would open doors for me. Then I finished high school, and during the summer, as I got closer to entering CEGEP, I became more and more unsure about Science. I questioned myself a bit and realized that I liked technology. I wanted to switch to Computer Science Technology (CST) in August, just before classes started, but the program was full. I had to fall back on the Springboard pathway with two computer science courses. I then officially entered CST in the winter session and have been progressing through the program ever since.

Paul - I've always wanted to work with computers. I've been playing with computers since I was a kid. I liked it a lot, but I wasn't curious enough to get into coding. I didn't take any computer science classes in high school. When it came time to choose a program, I watched a few videos on coding on the Internet and was sold. I applied to CST, but wasn't accepted, so I completed a first session in Springboard to a DCS. Then I reapplied in the Winter session and was accepted. I started in the same session as Luckson.

JPB - And now that you're about to graduate, tell me what keeps you busy when you're not in class at CEGEP.

Luckson - My passion right now is soccer. I play for the CEGEP team, as well as a team in a semi-professional league. I spend about 15 hours a week on the field. If you include travel, it must be between 20 and 30 hours, depending on whether my games are in Québec or not. I also work about ten hours a week.

Paul - I work about 20 hours a week and play the drums about five hours a week.

Success despite risk factors

JPB - Let's assume I don't know you and I only have access to the information you've just given me. I'd probably give you [laughs] less than a 5% chance of getting your diploma in CST.

First, according to the Fédération des cégeps' report on student success (2021), there is a significant difference between the graduation rates of male students (around 55%) and female students (around 67%), as well as between technical programs (around 60%) and pre-university programs (around 69%). The report also points out that students like you, who go through Springboard to a DCS, struggle to succeed in their academic careers, and that only one in three of this group graduates in five years or less (p. 16).

What's more, with regard to work, the ÉCOBES report on school-work balance (SWB) explains that SWB is an important indicator to take into account, because as soon as this balance becomes more difficult, CEGEP students are more likely to become disengaged or to consider dropping out of school (p. 40). For you, Paul, we were talking about 20 hours, and for you, Luckson, if you combine your semi-pro league hours with your 10 hours of work, you're over 20 hours and probably closer to 30, in fact. The report notes that at 20 hours of paid work per week, about 50% of CEGEP students have a difficult SWB (p. 45) and are therefore at risk of academic disengagement.

So, congratulations on beating all the odds and being just three weeks away from your graduation!

The game of appearances

JPB - Let's get back to this perception of being a numbskull. Where did it come from? As far as I know, you two were generally on top of things and didn't mix that much with the rest of the group.

Luckson – It's rooted in classroom situations. The explanations would be given and I'd see right away that the others already knew exactly what they needed to do. At the beginning of the program, we didn't talk too much to the others, so it was fine, but as we progressed in the program and talked more with classmates, we felt that they were ahead of us, or rather that they knew what they had to do. I like to say that they have my passion for soccer, but for computer science.

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Paul - There are others who are just computer geeks. I don't think they're necessarily more passionate than us, but they're just really good.

JPB - But wait a minute! We just mentioned that you two are statistical anomalies. Even if you don't say to yourselves on a daily basis, "wow! I'm still in CEGEP and I'm male, enrolled in a technical program, coming from Springboard to a DCS, and work 20 hours a week," you can surely see that the technical program quickly diminishes from three groups per session to just one. So, inevitably, you must realize that you're not "too bad" when you see that you're still on board despite the attrition, right?

Paul - It's all about appearances. We don't really notice when people leave the program, and from our point of view, we go from one group of 30 people to another group of 30 or so without realizing that there is now only one group instead of 3. Inevitably, that group is made up of the best of each of the previous year's groups, so the overall perceived level increases. It's still just appearances, but when I see students coming to class with computers that are worth several thousands of dollars, and which have multicoloured stickers and a geeky wallpaper, then I think "Ah! They're ready" [laughs] and wonder if I'm in the right place. Then, I realized that it's not just about knowledge, it's also about mentality and attitude. Anyway, that's just the gimmick, but it made me doubt at first.

Luckson - There's also the fear—I don't know about you, Paul—but when I started, I didn't know anything about computers; I hadn't taken any computer science classes in high school. Of course, I wondered if I was in the right program for me. I was exploring, and I think I kept that impression for a long time. Naturally, like Paul, I compared myself to those around me and went by appearances. To be honest, until my fifth session, I kept wondering if I was in the right place. Only during the internship did my doubts disappear.

Paul – Failure also plays a role. It took both of us four years to complete our program. Obviously, failures don't help you feel competent when you know that the normal length of a technical program is three years.

JPB - I can certainly understand how failure can contribute to feeling like a numbskull, because in your opinion, you're probably "falling behind the others," a phrase Luckson used in his definition of a numbskull earlier. However, I think you have the wrong idea about failure, because in CEGEP, it's more common than most students think. You're rarely alone in failing, and in the courses you're taking, there are probably other colleagues who are failing. Contrary to what you might think, it's not the majority of students who graduate from a technical program in three years. Failing courses is probably the norm rather than the exception.

Another topic I'd like to discuss with you is competition. Luckson, I know that you love competition and that it motivates you a great deal. But, Paul, I don't know much about your competitive spirit. I'd like to talk about it because I see a connection between what seems to be at the root of your numbskull feeling and competing with other students.

Luckson - It's motivating to me. There's going to be competition everywhere. You have to be able to handle it. You can't get demoralized by it, because you'll always be competing. But competition isn't always clear in the classroom. On a soccer field, you have a specific goal: to score. And you know whether you've scored or not. You know immediately if you beat an opponent in a game. In the classroom, it's more fuzzy. Yes, you know the class average, but you don't know the exact scores of your classmates. So, the comparison is more a matter of appearance.

Paul - Luckson's competitive mentality, I took it on only after a few sessions in CST, because at first I thought I was so out of place that I couldn't even begin to compare myself.

Luckson - [Laughs] Yes, it's true that in the first few sessions...

JPB - Finally, in retrospect, was it just an impression, your feeling of being numbskulls, or were the others more competent than you?

Paul - For some, it was clearly competence, but for others, I think it was more about appearance. Yes, we thought we were bad, but our assignments were better than those of other students who seemed hypercompetent. They looked like they were working and knew what they were doing, but in the end, when we compared our work, we realized that we weren't as bad as we thought.

The discomfort of learning

JPB - You felt like numbskulls, but the fact is that you weren't always, and sometimes it was just an impression. So I'm wondering how I could have helped you in the two courses I taught you. How can I change this perception? Because if you feel this way, I'm sure I've had and will have other students in the future who feel the same way.

Luckson - I think it mostly has to do with our perception of others in the program who we see as excelling. I don't really know what you can do as a teacher in those situations.

Paul - I think it's very helpful to have a framework or a procedure. Then I know what I have to do to meet the teacher's expectations. If I pay attention in class, then I know what the teacher wants, and I just have to do what they ask.

Luckson - I'd add that the feeling was even stronger in the more exploratory assignments. It's that kind of work where we're not sure how to start. By definition, exploration can go anywhere, and if we don't succeed, we'll fail. There's a grade to get, and you have to have something to show for it.

JPB - But if I give you supervised work where all you have to do is repeat a procedure provided by the teacher, I'm not sure I'm facilitating your learning. It gives you structure, but it also creates a dependency on the teacher and risks reinforcing your perception of being a numbskull, since structure and organization are extrinsic. In fact, I sincerely believe that the uncomfortable vertigo that comes with starting assignments and projects is inherent to learning.

Paul - If you always ask for less supervised work, some people can get by with very little. You have to believe and want them to try. You have to find a way to force people to explore, but without using a controlled framework. You can give guidelines and constraints. For example, give an assignment with focused content, but require them to use a technology they haven't seen before in the program. Or go the other way and require the use of specific technologies in a more exploratory project.

A happy ending

JPB - You've just finished your 12-week internship. How did it go?

Luckson - Very well. At the beginning, I still had this feeling of inferiority. In the company, everything I do has to be perfect, because if it's not, I can cause a problem.

JPB - But you were an intern, still learning, so you didn't have to be perfect.

Luckson - Yes, but in my head, I'm always thinking that I could do something that would be really damaging.

Paul - I'm in a professional environment, so even though I'm still learning, the company has expectations. I tell myself that I have no right to make mistakes and that I have to do well. But over time, I've come to realize that they don't expect much from me and just want to help me grow. In fact, they like interns who ask questions and are open-minded.

JPB - Did the internship help to reduce the feeling of being numbskulls?

Luckson - It gave me the confidence to say: "yes, I can do this job." In fact, I worked on something we hadn't learned at all in CEGEP, and that gave me a lot of confidence. I'm now aware that I'm able to act quickly in situations that I never encountered during my college studies.

Paul - I don't really have that fear of what's new anymore. The internship has convinced me that I can be productive.

JPB - So that's the end of that feeling of being numbskulls?

Luckson and Paul - [Laughs] We'll see!

JPB - Thank you very much for your time.

False normalcy

After doubting themselves during their CEGEP courses, Luckson and Paul magically regained their confidence after an internship of just 12 weeks. It's a blow to morale to now perceive CEGEP as a potentially unhealthy environment for students' self-esteem. Moreover, something just doesn't add up. Why can't two young people who love competition—a little too much so in Luckson's case, I might add—use it as leverage? My hypothesis is that the root of their self-esteem problem relates to their belief in the lie that "finishing CEGEP in two or three years" is for everyone.

Everyone knows that a pre-university program is "normally" completed in two years and that a technical program is "normally" completed in three years. In both cases, around 35% of students "respect" these deadlines (Ministère de l'Enseignement supérieur, 2019). What is actually more normal is the 65% of students who don't graduate within these deadlines. In the case of male students who graduate in three years from a technical program after starting in Springboard to a DCS and while working 20 hours a week, there are no statistics, but it must be close to 0%.

I think it's this almost impossible standard that Luckson and Paul compare themselves to, not their peers. When they see someone else doing better than them, what they see is probably not a better individual, but rather yet further confirmation of the myth that the majority of students complete the DCS in Computer Science in three years and therefore, it must be "easy" to do so. So, when they hit a stumbling block, they don't understand and don't feel normal, then they find a student with a $3,000 computer who confirms their feeling and finally they tell themselves they're numbskulls. That's why I think their competitive spirit can't save them; they're not competing against other individuals, they're competing against a false sense of normalcy because for students with their profile, graduating from college within the prescribed timeframe is the exception, not the norm.

I was looking for my shortcomings as a teacher during this discussion, but I ended up finding my shortcoming as a program coordinator. I repeat several hundred times a year that the DCS in Computer Science takes three years to complete and, in doing so, I'm not lying. I'm also telling the truth when I say that a lot of thought has gone into the DCS, which has been redesigned and reworked many times, and that the progression of learning is adequate to see a student through to graduation in three years. However, I'm perpetuating the false normality of a three-year Computer Science program for everyone, and thus, contributing to the anxiety of students like Luckson and Paul. So, in my opinion, the solution lies in adjusting my discourse as a program coordinator to better reflect the reality of student success statistics and to value the plurality of pathways. ▬

References

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Jean-Philippe Boucher has been teaching computer science at Cégep Garneau since 2008. He holds a master's degree in College Teaching from the Université de Sherbrooke's Faculty of Education. He feels more and more like a numbskull (a bit behind and lost) when talking to students. In order to limit the progression of the inevitable generation gap with students who, year after year, never age, he often needs to have certain expressions explained to him.

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Luckson Junior Vilus studied Computer Science Technology at Cégep Garneau. He is now pursuing his studies in computer science at Concordia University in Montreal. He is a top-level soccer athlete and a member of the Concordia University soccer team.