

Using SAS for Teaching Credit Risk: From Undergraduate Studies to Executive Education

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SAS Global Forum

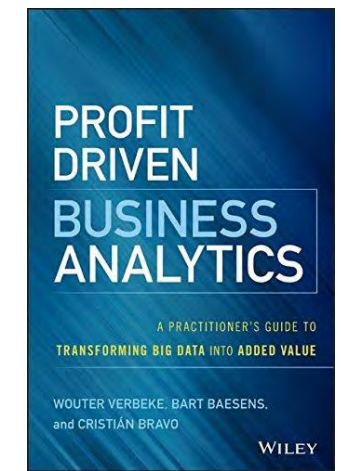
April 9th, 2018

Agenda

- What do I teach?
- Teaching Dimensions
- Student Types and Best Practices
- Tips and General Advice
- Conclusions

My Bio

- Associate Professor of Business Analytics at the University of Southampton, United Kingdom
- Research: Credit Scoring, Business Analytics, Data Science, Credit Risk, and Banking Regulation.
- Editor of the Journal of Business Analytics and of Applied Soft Computing.
- Part of the BKS team, teaching Analytics and Credit Scoring modules in Europe.
- Studied at the University of Chile (Chile)
 - Industrial Engineer, 2009
 - MSc. in Operations Management, 2009
 - Ph.D. in Engineering Systems, 2013
- Website (Spanish!): www.sehablanalytics.cl
- Twitter: @CrBravoR



What do I teach?

Undergraduate Modules

- I teach within the BSc. In Business Analytics.
 - Details:
- SAS base programming (second year)
 - Module oriented to giving **basic programming skills within a statistical context.**
 - Preceded by an introductory set of modules aimed at business skills.
 - Followed by a general data analytics module in R.
- Analytics in Action (final year)
 - Module oriented to giving **advanced analytics skills in particular business environments.**
 - SAS included in Credit Scoring context.
 - Key message: SAS for streamlined processes, Python for advanced methods.

MSc Modules

- Our programs have lower technical requirements than the BSc.
 - Some students will not have any quantitative background.
 - SAS key to facilitate learning of these concepts.
- Credit Scoring and Data Mining
 - Module for technical MSc. Students.
 - As in BSc, oriented towards **creating scorecards** and understanding credit risk.
 - SAS Enterprise Miner key to get quick results and understand the underlying processes.

MSc Modules (cont'd)

- Software for Data Analysis and Modelling
 - Introductory module teaching the **basics of data management** in SAS.
 - Students from the technical MSc's in Business Analytics
 - Goal: Know the basics!
- Knowledge Management and Business Intelligence
 - Introductory module, for **non-technical MSc's**.
 - SAS Enterprise Guide workshop as a gateway to visualization.
 - Goal: To give **context within a wider analytics framework**.

Professional Education

- All within the **Business Knowledge Series**.
- Credit Risk Modelling Using SAS
 - Intermediate course.
 - For professionals in the area of credit risk.
 - Credit risk analysis, insurance officers, auditing areas within banks.
- Analytics: Putting it All to Work
 - Basic course.
 - For companies that have just acquired SAS, or are thinking of acquiring it.

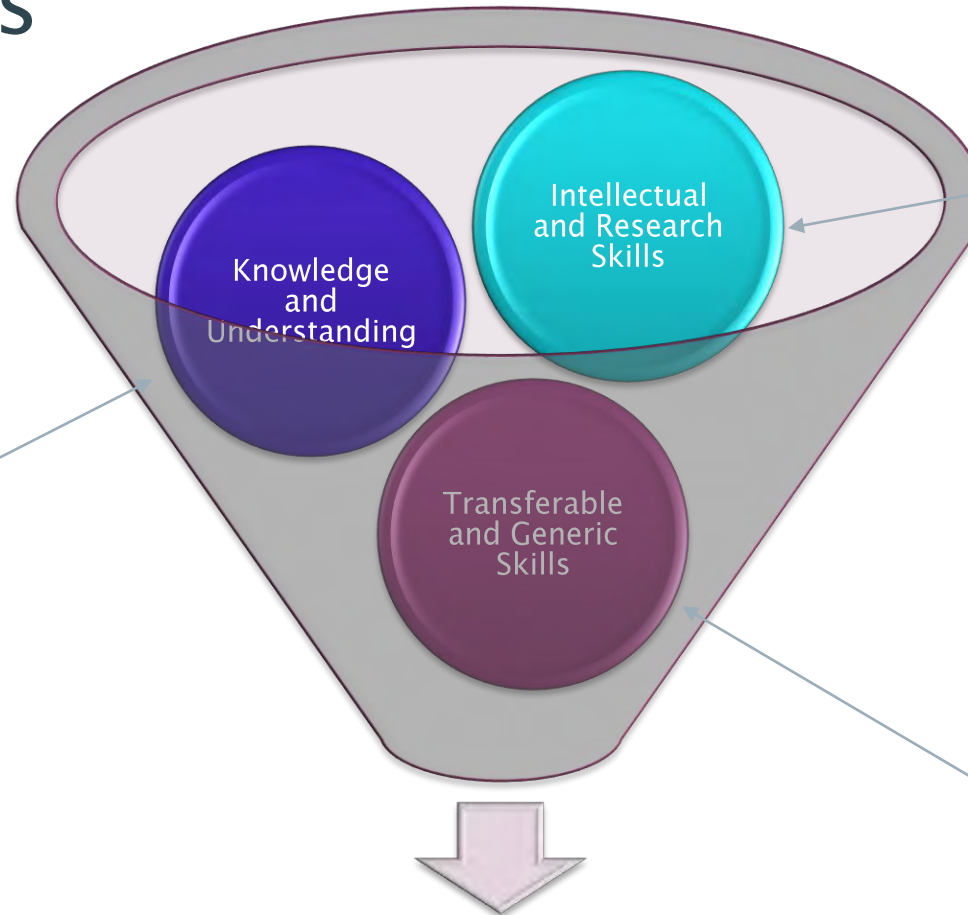
Professional Education

- Advance Analytics in a Big Data World
 - Advanced course.
 - For companies and professionals looking for a refresher and to answer what comes next.
- Every student has a different objective for the course!
- We need to design the teaching strategies of each module to be **tailor made for each student type**.
- We will see different teaching approaches for each student.

Teaching Dimensions

Learning Objectives

- Topics that will be covered in the course.
- Answers “What will you be able to **demonstrate knowledge and understanding** about?”



- Covers the specific new abilities that will be developed.
- Answers “What will **you be able to do** at end of the module?”

- What new abilities will you have **that go beyond this module?**

Learning!

Approaches: Length

- Modules can be either **short-form** or **long-form**.

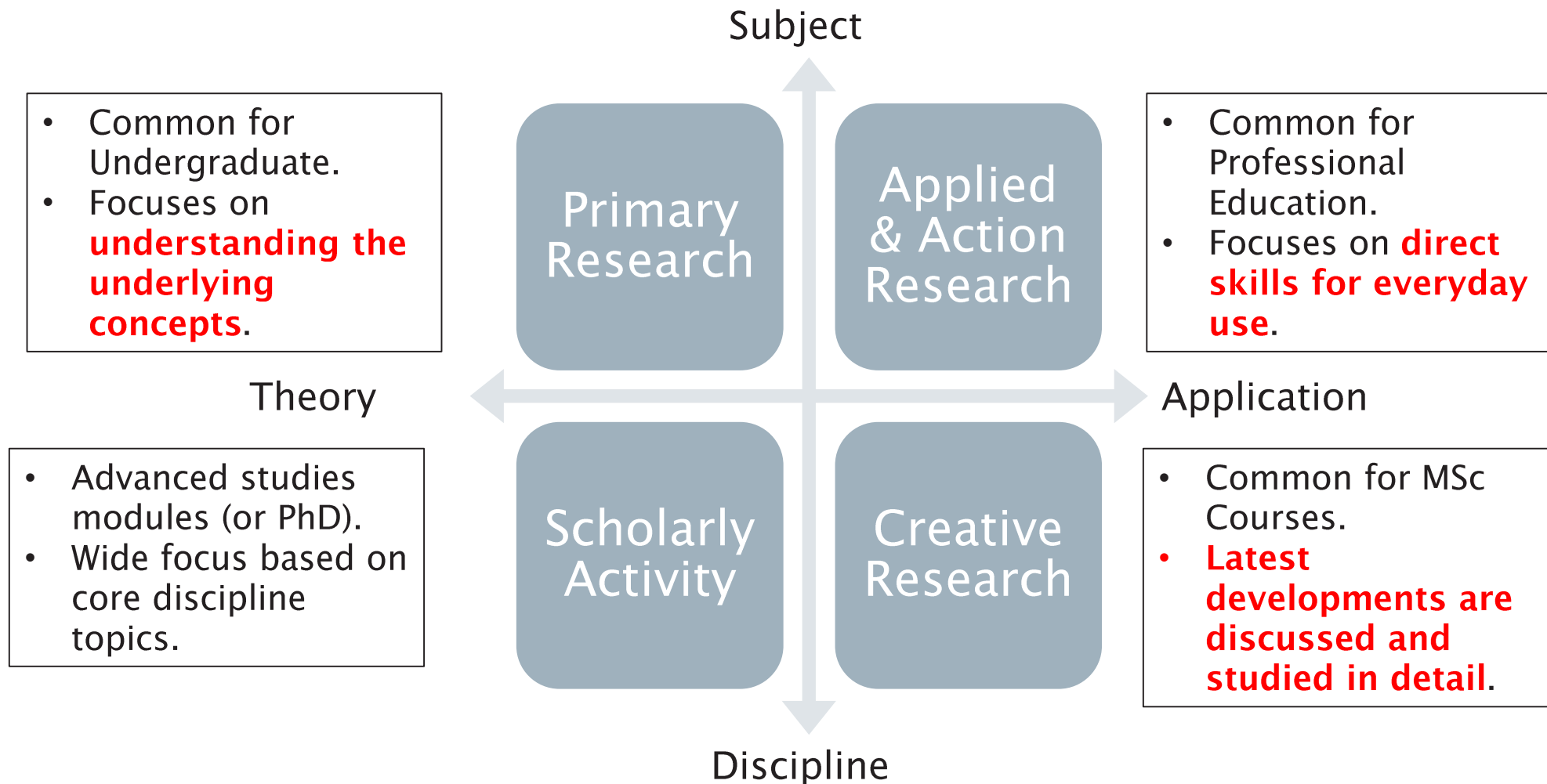
Short-Form

- Dense in topics
- Maturing the concepts is done after the module ends.
- From a few days to a few weeks in length.
- Common in postgrad and professional education.

Long-Form

- Thin in topics.
- Maturing the concepts occurs while the module evolves.
- Several weeks in length.
- Common in undergraduate and some MSc.

Approaches: Research–Led Teaching Cycle



Approaches: Teaching

- Using SAS effectively requires both theory and practice.
 - Theory can be both SAS specific knowledge, or domain-specific knowledge.
 - Think programming, knowing the commands, etc.
 - ... and also knowing how to apply it.
- Activities:
 - Traditional lecture: High in content, low in retention.
 - Workshops (guided software use): Low in content, high in retention.
 - Problem-solving: Very limited in content, very high retention. Terminal activity!
 - How much do we trust our students to **learn for themselves?**

Student Types and Best Practices

Student Types

- For simplicity, we will split them in three categories.
 - The Newbie.
 - Students with **no background** and not-too clear expectations.
 - The Seasoned.
 - Students with **some specific background** and clearer (but often misaligned) expectations).
 - The Expert.
 - Students with a lot of **very specific background** and clear expectations.
- Design of activities must be tailored to the type of students!
 - Many sub-levels exist! Understand them to add real value.

The Newbie

- No context!
- Expectations are very vague.
- Losses attention quickly.
- Unclear value of discussion

- Our role:
 - First, to contextualize the what, how, **why**.
 - All learning objectives need to be spelled out.
 - Usually clear what do they know beforehand. Leverage this!
 - Lecture styles:
 - Theory necessary beforehand.
 - Lots of practice afterwards.
 - Long form works best.
 - Research informed!



The Seasoned

- Personal context!
- Expectations misaligned with objectives.
- Interested in both theory and practice.
- Value is aligned with experience.



- Our role:
 - Usually diverse backgrounds. Survey them at the start!
 - Widen their view!
 - Show value beyond their expertise.
 - Focus on practical implications.
 - Lecture styles:
 - Theory is required, but mix with practice often.
 - Both lengths are useful.
 - Learning objectives!
 - Research led!

The Expert

- Highly Specific context!
- Expectations very clear, usually aligned.
- Interested in what will be useful tomorrow.
- Value is apparent to them, might be off!



Duisenberg, 2013. (cc) Wikimedia commons

- Our role:
 - Usually student in focused, short-form courses.
 - Understand what do they want out of them!
 - Survey at the beginning!
 - Applied and action research is key here.
 - Show the state of the art.
 - Show what comes next!
 - Highly practical teaching style, focus on skills.
 - Will usually have lots of previous knowledge (maybe more than yours!)
 - Discussions are key! Get them to share this knowledge.

Tips and General Advice

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Control pacing!

- Example: Credit Risk Analytics, first day (6 hours with 30-min three breaks).
 - Three theory-based sections, each with its SAS exercise on laptop.
 - First two hours: Theory.
 - People are awake!
 - Attention spans longer.
 - First break.
 - Start with exercise (to motivate last few hours).
 - One hour theory + Second exercise.
 - Less dense, more practical. Wakes people up!
 - Second break.
 - Last 1.30 hours of theory + 30 mins exercise.

Gamify if possible!

- If covering lots of different topics, give space for reflection.
- Short-form: Use quizzes.
 - Tool: AnswerGarden. www.answergarden.ch
 - Allows you to ask questions on-the-fly and see the answers in a wordcloud.
- Long-form: Do reviews.
 - Tool: Kahoot! www.getkahoot.com
 - Interactive quizzes with awards.
 - Reward people to keep interest in games.
 - I use chocolate.

Key Takeaways

- Understand your audience!
- Tailor-made the module to them.
 - Impacts marketing.
- Set expectations correctly.
- Control pacing and use technology to support you.

YOUR QUESTIONS

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