



Credit: Jennifer Richler

Portfolio and prosper

PhD students produce more than publications; they create a wealth of resources as a means to their research. Matt Crump, Associate Professor at the City University of New York, argues that PhDs should share these resources as portfolios that demonstrate their skills and to benefit the scientific community.

I vote to replace ‘publish or perish’ with ‘portfolio and prosper’ so that students can continue to do and share—important verbs for science—without fear of dying.

For background, I am a recently tenured cognitive psychologist at Brooklyn College of CUNY who advises students and sometimes evaluates job applicants. Yes, I want my students to publish, and I look at publications during searches. However, publishing is just one way to add to a portfolio, and it’s the portfolio of skills I am most interested in training and evaluating.

‘Publish or perish’ still rings some bells. Publications are proxies for tools of the trade, and students unequipped with the tools they need will find the already difficult job market even more unforgiving. Research is about doing and sharing what you did; so, ultimately, I agree with Yoda, who said, “do or do not, there is no try.” But, try as they might, publications don’t ring all the bells.

Academic track evaluators are limited by the inferences they can extract from a publication list. Multiple-author publications are the norm, and answers to common questions such as who did the writing, designed the experiment, ran the statistics, came up with the idea, etc., are often not clear. So, the sceptical onlooker may be left wondering: how independent is this person? Can they take a project from beginning to end? And do they have the skills they need to succeed? Industry-track evaluators may be even less familiar with extracting inferences from publication lists.

If I am dampening the din of publications as an assessment tool, then I want to equip my students with a resonating portfolio. I use ‘portfolio’ to refer to a process of skill development and communication and not as an idle synonym for curriculum vitae. So, what is this portfolio? In brief, a portfolio is a shareable record of the skills you are learning and products you are creating. In its best form, the portfolio is not an add-on to the main work you are doing: it is the work

you are doing, and it supports your work to help you do it better.

Let me lead with some examples from students in my lab or who have taken courses with me. One of the basic skills my students need to learn is computer programming for experiment creation and data analysis, and I encourage them to set up a GitHub account to document their progress learning to code. GitHub is ostensibly a website for open-source software development and version control, but it also provides a workflow that almost creates portfolios for free. For example, contributions to GitHub repositories are tracked and publicly viewable, so unlike publications, it is easy to see who did what and when they did it, based on the contribution record. For students in my courses, I’ll often give an assignment (with a tutorial) that requires them to create a GitHub account and then a personal website where they will submit their work. What have my students been up to? Here are some highlights of materials shared on their GitHub accounts: open data from their papers and source code for reproducible analysis, course materials, pedagogical research methods, online demos and tutorials for building web-based cognitive psych experiments, contributions to open-source software development, an R markdown template for writing a dissertation in CUNY style, example code for computational models in cognition, and contributed chapters to open educational resources (OER) books as part of final course projects. They’ve been doing and sharing all sorts of things, and have online portfolios in the form of websites that showcase their skills.

When my students hit the job market I’ll be happy to write them glowing letters (which might be ignored by some search committee members who think good letters can’t be trusted), but the real proof is in their portfolios. If they decide to head into

industry, they can get busy adding examples to demonstrate and improve upon their industry-relevant skills.

Some parting tips for prosperous portfolio development. Don’t view portfolio development as yet another thing to do on top of publishing. Adding stress on top of stress is not a solution. You’re doing things, so find ways to share what you do as you do them. This way, the portfolio comes for free. The GitHub model won’t work for everyone, but there are no shortages of portfolio-worthy activities to consider adopting. Running a study? Consider sharing your work on Open Science Framework (<https://osf.io>). You contribute to open science, share your research products and clarify your contributions. Learning a skill? Consider blogging about it. Writing a tutorial will reinforce your own skill learning, others might find it useful, and you show what you can do with the skill. Teaching a course? Consider adopting and contributing to an open-educational resource. You get to share your materials and show your experience with and approach to teaching. Last, make a research website to organize, share and get your portfolio out there.

TLDR (too long didn’t read): Science is about doing and sharing. Students of science (at all levels) spend time learning how to do things and should consider documenting their skills in a shareable portfolio, like a website or GitHub repository. Or, to paraphrase Spock, “portfolio and prosper.” □

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