Karsten A. Loepelmann -- Teaching Dossier

Teaching Philosophy

When I first began teaching, I immediately ran into a problem: I had no idea how to do it. At first, I tried imitating the instructors who had taught me--their mannerisms, jokes, and teaching styles. But that didn't really work: First, many of them were taller than me. And their styles were just not my style; I wasn't being authentic. So instead of copying what my instructors did, I took to heart one of the most important things they taught me: make decisions based on evidence.

I delved into the literature, searching for best practices on teaching and learning. For example, I have given students learning objectives for each lecture in every course I have ever taught. Further, in my courses that have essay exams, I typically combine several learning objectives to create essay questions--explicitly connecting learning objectives and assessment.

In addition to applying what is already known about teaching and learning, I am interested in innovation to meet my teaching goals and to keep the classroom experience interesting for students (even though I do not apply innovation for its own sake). When I do attempt something new, I keep close track of the results (e.g., via learning analytics) to ensure that I understand how the changes are affecting outcomes in my courses. For example, one semester I compared exam results of students who used the print textbook versus those who used the ebook. (Happily, I found no statistically significant difference.)

Although I may not have copied my instructors directly, they still have had a strong powerful influence on me as mentors. For example, in 2001, I taught an early hybrid-learning course originally developed by Connie Varnhagen, and later followed in her footsteps as part of the team teaching the SCI 100: Integrated Science (she was among the creators of this first-year program in the Faculty of Science).

I am gratified that my teaching style has resonated with students--not only that they like coming to class, but that they learn and understand principles of psychology, and how those principles relate to themselves and the world around them.

Applications of Pedagogy

I feel exceptionally fortunate that my area of training is psychology, giving me a solid grounding in understanding human perception, cognition, and behaviour. I apply what I know about learning and cognition in my teaching as much as possible; I strive to apply best practices in teaching and learning as supported by research evidence. Some of these principles include:
- active learning (e.g., Bonwell & Eison, 1991; Freeman et al., 2014)
- retrieval practice (e.g., Roediger & Karpicke, 2006)
- distributed practice and interleaving (e.g., Dunlosky et al., 2013)
- feedback-driven metacognition (Bjork, 1994)

My online lecture notes are fill-in-the-blank style, in which important words are replaced with blanks. Students can print out or download the notes, filling in the blanks during lectures. This saves students from trying to write down every word presented in class, while also fostering active learning and engagement during lectures. My notes are in HTML format, which is more accessible to students with disabilities than PowerPoint slides or PDF documents.

I make extensive use of classroom response technology, including IST's home-grown ePoll, PollEverywhere, and Mentimeter (and previously, hardware iClicker remotes). These apps can help students to evaluate their understanding of course material. Having the overall results immediately displayed allows students to compare themselves to the rest of the class, adding a social element to learning. Most importantly, answering questions requires students to perform retrieval practice; evidence indicates this is a powerful tool that aids learning and remembering. Additionally, when students' choices are evenly split between two alternatives (indicating a difficult question), I turn it into a think-pair-share activity, and then run the poll again. A meta-analysis has shown that cooperative learning enhances academic achievement, with a moderate effect size (Johnson et al., 2006).

In my first-year Basic Psychological Processes course, I have created "enduring ideas" assignments. Three times during the semester, students must reflect on material presented in a section of the course, and choose one interesting, surprising, or important idea, psychological phenomenon, research finding, or theory that has endured to be an important part of the science of psychology. These assignments help students to exercise their critical thinking and writing skills in a low-stakes assignment. They also require students to reflect on the course content, an act which in itself helps to consolidate their knowledge of foundational material. Finally, these assignments also enhance students' metacognition ("thinking about one's thinking"), making them more aware of what they do (and don't) understand (Conrad, 2013).

I have developed online labs for my Perception and Cognitive Psychology courses. Students go to websites that host experiments (for example, the American Psychological Association's Online Psychology Laboratory, or Cengage's CogLab) and participate in computer-based versions of classic experiments on topics like mental rotation, visual illusions, and visual search. These online applications provide students with their data, which I ask them to analyze and present in a write-up, along with their answers to conceptual questions based on the underlying theories. These labs allow students the unique opportunity to actively participate in research, thereby strengthening the connections between lecture/textbook material and students' hands-on experiences, and enhancing learning (Rutten et al., 2012).

My 200-level Behaviour Modification course is about using the science of learning to change behaviour and improve people's lives. Because of the emphasis on the application of scientific principles to everyday life in this branch of psychology, I designed a self-management assignment that requires students to choose a target behaviour to change, and then apply what they have learned in the course to change that behaviour. Students must support their choice by finding relevant research literature. I believe this assignment is the epitome of active learning: Students relate course content and research findings directly to themselves. (Some students have told me that they have continued their self-management project even after the course is over!) Including students directly in a project like this takes advantage of the self-reference effect--a robust way of enhancing memory (Rogers et al., 1977).

Also in Behaviour Modification, I have chosen a textbook that first presents principles of learning in early chapters, and then returns to them further into the textbook to discuss how the principles are applied as procedures of behaviour change. This novel design incorporates two powerful learning techniques, distributed practice and interleaving. In distributed practice, to-be-learned material is presented repeatedly, spaced over time; this increases memory consolidation and arrests forgetting. When topics are interleaved, they are alternated with other closely related topics; this aids in discriminating between concepts. (See Dunlosky et al., 2013, for a review.)

In my challenging 400-level Advanced Perception course, I give students credit for writing questions on the PeerWise website. This website allows students in a class to create and share multiple-choice questions with each other. Students have to reflect on course material, and actively create high-quality questions for the rest of the class to answer. Research has shown that generating content has a substantial effect on learning and remembering; "creating" is also the highest level of Bloom's revised taxonomy (Anderson et al., 2001) representing higher-order thinking. Another advantage is that the student-created questions can be used by the entire class for retrieval practice and feedback on learning. PeerWise maintains a list of dozens of publications demonstrating its pedagogical benefits (e.g., Kay et al., 2019; etc.).

Also in Advanced Perception, students are given assignments to find and read a recent peer-reviewed research paper on a topic in perception, and then write a press-release-style blog post that summarizes the article for a general audience (Metz, 2018). Employers are increasingly seeking graduates with the ability to bridge scientific expertise and laypeople's understanding. Again, this assignment requires creation (developing students' writing skills), and reflection (which helps to nurture metacognition, or thinking about one's own knowledge and thinking processes).

Experiential learning is a component in my 400-level Human Factors and Ergonomics course. This course is about the intersection of psychology, design, and engineering; and the application of knowledge about human perception, cognition, and action to real-world problems. In line with the course itself, I assign students the task of going to the City Centre Campus of MacEwan University and analyzing and critiquing the design and layout of the campus according to a set of design principles (Norman, 2013). Students report enjoying the opportunity to learn by doing, as an addition to classroom-based learning. There is evidence that a concrete perceptual-motor experience helps ground concepts, and enhances learning (Glenberg & Kaschak, 2002).

As much as possible, I present multiple examples and demonstrations of the psychological principles that I explain in all of my courses. Doing so has been shown to increase understanding of abstract concepts (Hakel & Halpern, 2005). For example, vision science frequently relies on an analysis of visual illusions; I show and explain striking visual illusions like colour afterimages, the motion aftereffect, and many contrast illusions. I engage the class using interactive demonstrations of phenomena like inattentional blindness, change blindness, and visual search; and do interactive tests of their sensory, short-term, and long-term memory. In class, students assess their happiness using the Satisfaction With Life Scale (Diener et al., 1985), test whether they have a fixed or growth mindset with the Dweck Mindset Instrument (Dweck, 2006), and determine their decision-making style using the Maximization Scale (Nenkov et al., 2008). Presenting visual images can also take advantage of dual coding, in which information is stored not only as a verbal code, but as an image as well (Paivio, 2006).

I was an early adopter of PowerPoint, using it to present not just text, images, and video, but also interactive animations and demonstrations. I am mindful of the over-reliance on PowerPoint (Frommer, 2012; Tufte, 2006) and work hard to employ best practices in its use (e.g., Durso et al., 2011; Kosslyn, 2011; Kosslyn et al., 2012).

Equity, Diversity, and Inclusion

As a white male, I recognize that others may not likely have experienced the same advantages that I have benefited from. Students--especially those who only take one introductory psychology course--may view me as an exemplar of a psychologist (even though that is certainly not the case). My closest friends have come from a diversity of backgrounds (including people of German, Ukrainian, Francophone,

Chinese, Guyanese, and Korean heritage); through their friendship, I have come to understand the importance of equity, diversity, and inclusion.

Although much of the research I present in my courses has been conducted by white anglophone males, I strive to highlight important contributions that have been made by women and people of colour. In those cases, I do not just cite my source in typical APA style as (name, date). Instead, I present the full name of the individual (e.g., Mary Whiton Calkins, Elizabeth Loftus, Linda Bartoshuk, Vilayanur Subramanian Ramachandran, Asaf Degani, Masahiro Mori) along with a photo of them.

In one memorable class in 2018, I was preparing a lecture on the linguistic relativity hypothesis that included a section on the "Eskimos have hundred of words for snow" myth. I sent a copy of my lecture notes in advance to a student in the class who is a well-known Inuit performer, so that she could review it for accuracy. Her feedback noted that I did not give much information about Inuit people, so I invited her to give a brief lecture on Inuit culture. She enthusiastically agreed, and presented a moving and vivid portrait of her culture.

Ethics

My role as an instructor may inadvertently place me in the position of being a role model. As a father of two children, I know what an important responsibility that is. I try to conduct myself in a way that demonstrates high ethical standards. This applies to my course content, as well as directly to my teaching (Landrum & McCarthy, 2012). For example, in my Basic Psychological Processes course, I explain principles of ethical treatment of human and animal participants in research. Even further, in my Behaviour Modification course, to ensure that students change their behaviour in a beneficial way, they are assigned a required reading on ethical issues in behavioural research, and must find evidence in the research literature that their behaviour change will not be harmful in any way. (The latter surely serves as a relief to the University's lawyers.)

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