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## Using Permaculture Design Principles to Teach Research Design Courses: A Transdisciplinary Approach to Course Design

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### Abstract:

*Taking a transdisciplinary approach to course design has resulted in a learning environment that creates a bridge between highly relevant concepts and new course material. In this case, the broad concepts (care for the natural world, care of people, fair share for all, and ideas of stacking functions, encouraging biodiversity, thinking of a problem as the solution, and incorporating beauty) and specific principles of Permaculture Design have been used to organize a graduate course in Research Design, which has engaged students in learning challenging material and skills through the framework of principles that are accessible and engaging.*

**Key words:** course design, permaculture, research design, interdisciplinary, transdisciplinary, higher education, graduate education

At the core of every teacher's heart is the desire to ensure that their students are making sense of their course material, that they are connecting with it, and that they are able to use it in a way that will make their life better. Today, across the globe, concerns about the environment and sustainable practices permeate all sectors. I sought a way to help my students connect with the challenging content of my research design

courses, which many students expect to be irrelevant in their everyday lives. Thinking about the highly relevant issues of our global environment led me to consider incorporating Permaculture Design Principles into the development of my research design courses, to determine the efficacy of using concepts related to a sustainable environment as a way to connect my students to the content and skills required in my research design courses. Bill Mollison (1988), an Australian who first used the term, Permaculture, describes it as “a philosophy of working with, rather than against nature; of protracted and thoughtful observation rather than protracted and thoughtless labor; and of looking at plants and animals in all their functions, rather than treating any area as a single product system.” Though this philosophy is concerned with sustainable, ecological design and architecture, the principles can be applied across many disciplines and provide a logical framework for introducing and teaching concepts of research design.

Permaculture Design Principles are used in the development of many environments, but when they become internalized by learners, their power to influence behavior extends beyond the domains in which permaculture is typically practiced. One student has completely changed how he plans his shopping trips, another has found new meaning in everything he reads. I see the potential benefits of permaculture for many landscapes, but also in my “thoughtscapes” as it has become almost impossible not to incorporate permaculture thinking in all aspects of my life. I have completed the Permaculture Design Certification Course, where the core values of care for the natural world, care of people, and fair share for all were emphasized, along with the ideas of stacking functions, encouraging biodiversity, thinking of a problem as the solution, and incorporating beauty. These concepts resonate with me and provide a foundation for ethical behavior, but two of the universal concepts that are used in

Permaculture Design, “stacking functions” and “the problem is the solution,” have become the most useful, and completely unavoidable, themes in my daily life as an educator.

I teach courses in general and qualitative research design, which are required core courses for graduate students from several different academic programs in education and counseling. These research courses provide a foundation for our students as they move into progressively complex roles and become transformative leaders who use data to make decisions, develop innovative solutions, and manage change processes in their organizations. However, for most of my students, research design courses are seen as a distraction at best, or as a dreaded requirement at worst. They are highly invested in the other coursework that is clearly connected to their desired career paths, which is understandable, but this presents a challenge for me as I work to engage them in recognizing the relevance and importance of research design for their lives and careers.

As I completed my permaculture design certification course, and continued to think in terms of “stacking functions,” it occurred to me that Holmgren’s (2002) Twelve Permaculture Design Principles were perhaps the solution to the problem of creating relevance in my research design courses. Permaculture Design involves the use of principles that honor ecology, sustainability and integration, which are inviting, accessible concepts. Integrating the principles of permaculture design, which feel natural to a broad range of people, with the principles of solid research design, which may not seem relevant or interesting to many students, results in a new way of conceptualizing the research process. Learning changes behavior, and if we want our graduates to put their coursework to use, they have to be engaged in learning. The Permaculture Design Principles provided the relevance needed to spark that engagement, and opened the door to a deeper, and painless, understanding of research design principles.

Holmgren's principles have become the foundation from which I launch the research design process. We "observe and interact" in the development of needs assessments and finding researchable problems. We work on research that is important and interesting, which is a way to "catch and store energy" that is circulating around current issues. The students can understand the need to "obtain a yield" in terms of their literature reviews and data collection. They are encouraged to "apply self-regulation and accept feedback" throughout the process, as they work with integrity and share their findings. They have to "use and value renewable resources and services" and "produce no waste" as they not only avoid printing or other environmentally damaging practices in their work, but also as they use credible sources, value the librarians and colleagues from whom they get help, and do not waste time or resources gathering unnecessary data. In permaculture, we stress the need to "design from patterns to details," which is also required in designing research.

As my students synthesize information, they are encouraged to "integrate rather than segregate," and to "use small and slow solutions" as they consider the development of innovations based on their research. The research design process is strengthened when students "use and value diversity" as they consider multiple perspectives not only for designing their research but also while interpreting data. They "use edges and value the marginal" when they are open to what might arise through the process and understand that the most useful information is not always the most obvious. And as leaders in their fields as well as designers of research projects, the ability to "creatively use and respond to change" is vital.

As my students become acquainted with Holmgren's Permaculture Design Principles, and we use them as an invitation to the research design process, they are likely to "stack functions" conscientiously and see that "the problem is the solution" in all of their work, not just in my classes. They

may become invested in the core values of care for the natural world, care of people, and fair share for all, as they see those principles applied in our course. They also may begin to develop an interest in permaculture as it is traditionally applied, begin to see landscapes differently, and become active in the applied science that is permaculture.

I have created a course outline that creates an intersection between the Permaculture Design Principles and the work of designing and carrying out research projects, which is found in the table below.

<b>Permaculture Design Principles</b>	<b>Research Design Principles</b>
Observe and Interact	Find a researchable problem. Observe and gather data.
Catch and Store Energy	Work on research that is important and interesting.
Obtain a Yield	Locate relevant literature and gather useful data.
Apply Self-Regulation and Accept Feedback	Work with integrity and share your findings.
Use and Value Renewable Resources and Services	Use credible sources of information and assistance, and respect and protect research participants and data. Save your work.
Produce No Waste	Do not gather unnecessary data or waste time or resources.
Design from Patterns to Details	Consider broad research problems and questions and then design and plan the details of your research.
Integrate Rather Than Segregate	Synthesize information, both from the literature and from your own research findings.
Use Small and Slow Solutions	Solve problems as they arise, and consider the problems your research may help to solve, even if applied in small doses, over time.
Use and Value Diversity	Consider multiple perspectives.

Use Edges and Value the Marginal	The most useful information is not always obvious at first; be open to what might arise.
Creatively Use and Respond to Change	Work with changes that occur at all phases of your work; use all of your talents.

While for this course the intersection of Permaculture Design Principles and Research Design requirements is natural, it is possible to consider other transdisciplinary connections that will create new ways of thinking about course material, and engage students in learning and applying new knowledge and skills. As educators and scientists think about engaging their audiences in many fields of study, the use of a transdisciplinary lens may be useful and effective for them as well.

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