

## Creating a flexible deep structure to manage change in education administration

We are delighted to write the introduction to this 13th edition of the *Journal of Research in Innovation in Teaching and Learning*. Over those 13 editions, we moved the journal's purpose from seeking to encourage research internally at National University to one that is securing a leadership position in an evolving landscape. Changes in globalization, technology and social values, to name a few, have driven us to think about our "traditional" models and how they meet learners' needs/goals. At National University, we moved decisively to increase access, reduce costs to students, improve student success, build infrastructure and create a communication and inclusion culture.

On or about March 2020, we realized that the world as we know it will change forever. Our immediate responses to COVID-19 included the closure of onsite facilities, the conversion of onsite courses to online courses, the relocation of work to home, the on-off return of compulsory onsite courses and the challenge of safety when onsite activities are necessary. We understand the challenges that our colleagues in higher education face with residential housing and athletics programs. Individuals, groups, organizations, states, nations and the world will forever change due to this pandemic.

Paleontologists [Eldredge and Gould \(1972\)](#), inspired by evolutionary biology, introduced us to punctuated equilibrium theory. [Baumgartner and Jones \(1993\)](#) brought the concept into the social sciences, arguing that policies usually stay the same (stickiness) because of a decision-maker's bounded rationality, a group's vested interest and/or an institution's culture. The system will change when these conditions change, often by changing the (political) party/elite in control. The premise of punctuated equilibrium in social theory is that a social system will continue for a period of stasis (gradual change) until radically altered by a sudden change ([Tilcsik and Marquis, 2013](#); [Gersick, 1991](#)).

## Does COVID-19 induce such a sudden change?

[Gersick \(1991\)](#) provided two cautions in applying the punctuated equilibrium theory to explain or predict change. She pointed out that [Gould and Eldredge \(1977\)](#) "never claimed either that gradualism could not occur in theory or did not occur in fact. Nature is far too varied and complex for such absolutes." [Gersick \(1991\)](#), referencing [Wake et al. \(1983\)](#), reiterated that "behavioral plasticity allows organisms to compensate for environmental changes without changing morphologically. In organizations, punctuational patterns may be most evident in systems that have confining deep structures; they may be least evident in highly flexible systems." [Gersick's \(1991\)](#) second caution "is to avoid applying models from one research domain to another . . . Human systems, self-aware and goal-directed, have the capacity to 'schedule' their own opportunities for revolutionary change . . . to solicit outside perspectives, and to manage their histories in ways that are inconceivable to nonconscious systems." [Gersick \(1991\)](#), capturing [Prigogine and Stengers \(1984\)](#), postured that the "historical' path along which the system evolves . . . is characterized by a succession of stable regions, where deterministic laws dominate, and of instable ones, near the bifurcation points, where the system can 'choose' between or among more than one possible future."

[Gersick \(1991\)](#) provided a thorough discussion of the characteristics and determinants of equilibrium and revolutionary periods. Briefly, in a period of equilibrium, incremental changes occur without altering the deep structure. In a revolutionary period, the deep structure is disrupted or dismantled. Deep structural changes happen when they create



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inertia. Such inertia often occurs when a system's parts misalign either internally or with its external environment or changes in the external environment cut off or restrict resources. So, incremental or revolutionary changes result from or change the deep structure, respectively.

To understand the responses to COVID-19, we must understand the underlying deep structure of an institution. [Prigogine and Stengers \(1984\)](#) proposed that a deep structure has differentiated parts, and each part has a role to play in the exchange of resources with the environment. A deep structure results from strategic choices, and it is sticky because early choices rule out or rule in additional choices and reinforce subsequent choices. Bounded rationality, vested interest and institutional culture are critical to a deep structure ([Baumgarther and Jones, 1993](#)).

### **Is it possible to build a deep structure that facilitates flexibility?**

Our ability to respond to change is facilitated by creating coordinated parts of a system to use resources from the environment. It is not a one-size-fits-all. Instead, choosing a deep structural state that is continuously reinventing itself by adding "parts" to the ecosystem is more likely to buffer and thrive even in a pandemic. Humans and social systems have the luxury to make choices even within a turbulent period.

At National University, even before the pandemic, we committed to the successful delivery of high-value student outcomes as the university's primary mission. Precision education is the operating choice designed to achieve that mission. The three precision education components are laser-focused on high-value student outcomes, explicitly defined as assuring students meet their individual goals. The pathway to that goal achievement is each student's personalized learning plan. Delivering high-value student outcomes is contingent upon knowing each student's goal and creating a personalized learning plan to achieve that goal.

The first component of precision education is assessment-led, adaptive instruction. Such personalized instruction is proving effective across multiple disciplines ([Dieterle and Murray, 2009](#)). Three types of assessments drive adaptive instruction (diagnostic, formative and summative). Diagnostic assessments of existing skills and knowledge support credit for prior learning and create roadmaps for building additional skills and knowledge. Formative assessments support frequent knowledge and skills checks that yield regular feedback on learning progress and help shape future learning activities. Student profile assessments provide information about the student and the instructional and non-instructional supports most likely to improve their learning. Summative assessments help us stand behind our guarantee of learning and student success.

The second component of precision education is holistic student support. By holistic, we mean attending to all factors that might enhance or interfere with a student's goal achievement ([Kahu, 2013](#)). Providing holistic student support is the joint responsibility of all who work with students – faculty and staff alike. All who interact with students need to be part of this integrated, holistic support. It requires sophisticated tracking of interactions with students such that these interactions can be evaluated continuously and the results used to guide future deployments of support.

The final component of precision education is competency-based credentialing. In its simplest form, competency-based credentialing means providing credentials specifically relevant to student goals. Most often, these are workforce credentials that are more specific than traditional credentials on a transcript ([Anderson, 2018](#)). While stackable into traditional outcomes like course completion, certificate completion and degree completion, they provide a more detailed picture, "precise" if you will, of the skills and knowledge students possess to support their goal achievement.

Precision education is an operational strategy that creates a deep structure to facilitate flexibility. Implementing such choices will come with challenges, but our faculty, staff and

students see the necessity to facilitate this change. A shortlist of accompanying choices to continue to build the ecosystem includes: redesigning instruction to be appropriately adaptive, continually addressing the psychometric reliability and validity of assessments, redefining instructional and student support roles, building ever more sophisticated data systems to support predictive analytics, re-imagining transcripts, re-imagining “courses” as primary units of instruction, re-imagining seat time as the primary metric of learning and countless other processes in our legacy model. [Tushman and Romanelli \(1985\)](#) concluded that implementing these changes will be influenced by cognition, motivation and obligation.

**Gangaram Singh, Ph.D.**

*Provost and Executive Vice President of National University*

**David W. Andrews, Ph.D.**

*President of National University, and*

**Michael Cunningham, Ph.D.**

*Chancellor of National University System*

## References

- Anderson, L. (2018), “Competency-based education: recent policy trends”, *Competency-Based Education*, Vol. 3 No. 1, e01057.
- Baumgartner, F. and Bryan, D. (1993), *Agendas and Instability in American Politics*, University of Chicago Press, Chicago.
- Dieterle, E. and Murray, J. (2009), “Realizing adaptive instruction (Ad-In): the convergence of learning, instruction, and assessment”, in Schomorrow, D., Estabrooke, I. and Grootjen, M. (Eds), *Foundations of Augmented Cognition*, Springer, Berlin.
- Eldredge, N. and Gould, S. (1972), “Punctuated equilibria: an alternative to phyletic gradualism”, in Schopf, T. (Ed.), *Models in Paleobiology*, Freeman Cooper, San Francisco.
- Gersick, C. (1991), “Revolutionary change theories: a multilevel exploration of the punctuated equilibrium paradigm”, *Academy of Management Review*, Vol. 16 No. 1, pp. 10-36.
- Gould, S. and Eldredge, N. (1977), “Paleobiology”, Vol. 3, pp. 115-151.
- Kahu, E. (2013), “Framing student engagement in higher education”, *Studies in Higher Education*, Vol. 38 No. 5, pp. 758-773.
- Prigogine, I. and Stengers, I. (1984), *Order Out of Chaos: Man’s New Dialogue with Nature*, Bantam Books, New York.
- Tilcsik, A. and Marquis, C. (2013), “Punctuated generosity: how mega-events and natural disasters affect corporate philanthropy in US communities”, *Administrative Science Quarterly*, Vol. 58 No. 1, pp. 111-148.
- Tushman, M. and Romanelli, E. (1985), “Organizational evolution: a metamorphosis model of convergence and reorientation”, in Cummings, L. and Staw, B. (Eds), *Research in Organizational Behavior*, JAI Press, Greenwich.
- Wake, D., Roth, G. and Wake, M. (1983), “On the problem of stasis in organizational evolution”, *Journal of Theoretical Biology*, Vol. 101, pp. 211-224.