

Process Education™ — Past, Present, and Future

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Abstract

Process Education (PE), a term that came into being twenty-five years ago, is built upon a foundation of educational philosophies and approaches centered in active and facilitated learning. As background, we define Process Education, as well as identify some of its underlying concepts and related efforts. We describe the evolution of Process Education and provide examples of its impact within higher education. Finally, we explore potential future directions of Process Education.

Introduction

Process Education™ can be defined as a **performance-based** philosophy of education which integrates many different educational **theories, processes, and tools** in emphasizing the continuous development of **learning skills** through the use of **assessment** principles in order to produce **learner self-development**.

(<http://www.pcrest.com/PC/PE/index.html>)

Process Education™ (PE) principles are founded on two basic beliefs. The first is that every learner can learn to learn better, regardless of his or her current level of achievement; one's potential is not limited by current ability. The second principle is that educators have a responsibility to "raise the bar" in their profession because learning is enhanced and achieved for all learners when educators help build learning skills, create and improve quality learning environments, design solid coherent curricula, and serve as effective facilitators of learning.

PE requires that learning and facilitation of learning take place within an assessment culture, rather than a culture of evaluation. In the traditional educational model, the focus is upon evaluation—an educator judges a student's efforts and performance against an objective criteria with standards. While this evaluation can provide a useful snapshot of performance, it does not encourage the *improvement* of that performance. Through the careful use of assessment, however, students can continually improve the quality of their performance. This is critical, as the goal of PE is to help individuals develop into self-growers. Self-growers are learners who seek to improve their own learning performance; can create their own challenges; serve as leaders and mentors to others; take control of their own destiny, and self-assesses and self-mentors to facilitate their own growth.

As this paper aims to present a comprehensive introduction to Process Education, we will briefly survey

its philosophical underpinnings, examine the evolution and impact of PE over the last 25 years, and finally consider possible avenues for PE growth and application in the future.

Philosophical Underpinnings and Efforts Related to Process Education

The word *education* usually refers to the process of gaining or cultivating knowledge, skills, beliefs, attitudes, values, and character traits. Traditional educational philosophies were profoundly influenced by the thinking and teachings of individuals such as Plato, Aristotle, Augustine, and John Locke. Beginning in roughly the later half of the twentieth century, educational philosophies were increasingly developed and articulated in the contexts of different disciplines (e.g. educational history, sociology, psychology), rather than the context of any particular philosophical school (Frankena, 1971). As a result, educational philosophy has evolved from a historically narrow field to a kind of broad category, containing a multiplicity of different perspectives.

Process Education is based upon a foundation of several different educational philosophies and approaches, most of which fall into the general category of constructivism. Constructivism is built upon the cognitive theory of development as pioneered by Jean Piaget. One of the core assumptions of constructivism is that learning is an active, contextualized process of constructing rather than acquiring knowledge. This knowledge is constructed on the basis of personal experiences and the hypotheses that a learner makes about the environment. Piaget is also credited with identifying stages of (largely cognitive) learner development. Subsequent theorists built on or provided alternatives to his ideas. Lev Vygotsky's social developmental theory, for example, focused more heavily on the influence of social interaction in the process of cognitive development. Jerome Bruner also looked to

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environmental and experiential factors. His book, *The Process of Education*, built on constructivism, especially the structure of learning and learning readiness, leading to his recommendation of approaches such as a spiral curriculum and discovery learning.

Discovery, Experience, and the Role of the Educator

Discovery learning, also known as inquiry-based learning, builds on the ideas of John Dewey, Piaget and other constructivists. Dewey wrote (1938), "There is an intimate and necessary relation between the processes of actual experience and education." Through discovery learning, the learner is placed in situations whereby he or she calls on prior knowledge and past experience to discover new information or skills. Discovery learning situations can range from the unstructured and open to those carefully structured by a facilitator in order to lead a learner to a planned destination.

Emphasis on discovery in learning has precisely the effect on the learner of leading him to be a constructionist, to organize what he is encountering in a manner not only designed to discover regularity and relatedness, but also to avoid the kind of information drift that fails to keep account of the uses to which information might have to be put. (Bruner, 1962)

Educational theorists like Alan Tough and Malcolm Knowles have applied these concepts to adults, using the term *self-directed learning*. Self-directed learning has become increasingly important as our rapidly changing world necessitates life-long learning, extending well beyond any formal classroom. Knowles was an especially strong advocate for the self-directed learner, arguing that proactive learners enter into learning more purposefully and with greater motivation, leading to increased retention (Knowles, 1975).

Educational theorist David Kolb spoke of the benefits of learning from experience. He proposed a learning cycle, which starts with a concrete experience, proceeds to observation and reflection on that experience, moves on to forming abstract concepts based on the reflection, and ends with testing these concepts in new situations (Kolb, 1975). Experiential education emerged from his ideas, which, according to the Association for Experiential Education, is defined as, "a philosophy and methodology in which educators purposefully engage with learners in direct experience and focused reflection in order to increase knowledge, develop skills and clarify values" (www.aee.org). Table 1 offers the Principles of Experiential Education according to the Association of Experiential Education. It is noteworthy that proponents of service learning embrace many of these principles as well (www.servicelearning.org).

Table 1 Principles of Experiential Education

- Experiential learning occurs when carefully chosen experiences are supported by reflection, critical analysis and synthesis.
- Experiences are structured to require the learner to take initiative, make decisions and be accountable for results.
- Throughout the experiential learning process, the learner is actively engaged in posing questions, investigating, experimenting, being curious, solving problems, assuming responsibility, being creative, and constructing meaning.
- Learners are engaged intellectually, emotionally, socially, soulfully and/or physically. This involvement produces a perception that the learning task is authentic.
- The results of the learning are personal and form the basis for future experience and learning.
- Relationships are developed and nurtured: learner to self, learner to others and learner to the world at large.
- The educator and learner may experience success, failure, adventure, risk-taking and uncertainty, because the outcomes of experience cannot totally be predicted.
- Opportunities are nurtured for learners and educators to explore and examine their own values.
- The educator's primary roles include setting suitable experiences, posing problems, setting boundaries, supporting learners, insuring physical and emotional safety, and facilitating the learning process.
- The educator recognizes and encourages spontaneous opportunities for learning.
- Educators strive to be aware of their biases, judgments and pre-conceptions, and how these influence the learner.
- The design of the learning experience includes the possibility to learn from natural consequences, mistakes and successes.

Source: www.aee.org

Process Education shares many components with both experiential education and problem-based learning, or PBL, another active and learner-centered approach to education. (www.pbl.org). PBL was introduced at McMaster University and was documented extensively by Barrows and Tamblyn, who applied it to medical education, where faculty were frustrated with the effectiveness of traditional teaching methods. Barrows and Tamblyn found that medical school graduates were often not able to apply knowledge they had learned to the experiential challenges they faced when working as interns in a hospital environment.

Through PBL, students are presented with an ill-defined problem and they work cooperatively to solve the problem, accessing resources as needed. An important aspect of PBL is that it is student-centered, with the students, rather than the instructor, managing the problem-solving process. The faculty member in PBL serves as a facilitator of learning.

Central to each of the methods previously described is the role of the faculty member as a facilitator of the learning process. There are many different strategies for facilitative learning; the main goal of each is to move the teacher away from the center and locus of control.

Cooperative Learning, Mentoring, and Learning Communities

Much has been written about the use of cooperative learning in education. As Wong and Wong stated in 1998, "Cooperative learning is not so much learning to cooperate as it is cooperating to learn." As they and others have indicated, cooperative learning extends far deeper than just placing students in groups. Two central elements of cooperative learning are positive interdependence and both group and individual accountability.

The concept of mentoring is increasingly accepted as a valid and promising model for increasing student learning. Traditionally, the mentor has been seen as the "sage," (King, 1993) but more recent formulations have positioned the mentor as more equal to the learner and as one who also learns from the interaction. The mentor does, however, engage with the learner in what is sometimes termed "authentic assessment" or "performance-based assessment." These strategies draw on the approaches of PBL and experiential learning. Assuming a learner is placed at the center of the learning experience, different strategies are needed to assess his or her performance. The facilitator, or mentor, works with the student to identify his or her level of performance. Rubrics are often used to assist in the identification of these levels.

The mentor, or facilitator of learning, may also utilize instructional scaffolding to assist the learner, an concept articulated by Bruner. In scaffolding, the task is adjusted according to the current level of the student. Bruner spoke of a spiral curriculum, meaning that the learner is guided from level to level by carefully building on previous learning experiences. Scaffolding is also an aspect of the approach of differentiated instruction, where the teacher adjusts the learning situation to the learner, rather than imposing a one-size-fits-all curriculum on students.

Related to the approaches of both facilitated and cooperative learning is the valuing of the learning community. Many have looked to the writings of Paulo Freire who articulated the importance of dialogue, where, rather than one person acting upon another, individuals work with one another in a community.

As an educational philosophy *Process Education* is a synthesis of realist and idealist world views, with a primary focus on performance. It integrates many of the tenets of constructivism with personal development, performance measures, and assessment in order to produce learner growth, promote critical thinking, and nurture continuous improvement.

The Evolution of Process Education

In 1985, Pacific Crest began introducing its software, *PC:Solve*, to institutions of higher learning across the country. They conducted small workshops demonstrating how students were able to independently learn to use the software by processing the information presented within the software's help system. The students were tasked with critically reading this information in order to gain an understanding of the given examples. To succeed, the students needed to take risks and try things out. Through the use of analysis and synthesis they would apply the appropriate tools to the problems presented. Finally, Pacific Crest demonstrated (to the faculty observing) how students were able to generalize and transfer skills to apply what they were learning to new situations. Within the following years, Pacific Crest added reflection and self-assessment to this process so that the metacognition of what was happening was apparent to the students themselves. These informal self-assessments allowed the students to reflect on their learning which helped to improve their future learning and performance.

Between 1989 and 1990 Pacific Crest conducted an empirical study of 22 colleges from across the country. These institutions included an engineering college, a business college, a women's college, a highly selective research university, as well as several liberal arts, state

and technical colleges. At each institution a random sample of seniors, juniors, sophomores, and freshmen were selected by faculty and a competition was set up matching seniors against each of the other three class levels. The students were asked to perform an array of challenging tasks that required them to think about information critically, process it, and transfer it to new situations. The faculty observed their students perform these tasks for a 90 to 120 minute period. By the end of that period, many faculty were frustrated and often very disappointed with their seniors, because the seniors' performance was not significantly better than the performance of freshmen. These outcomes, replicated again and again, convinced Pacific Crest that current practices within higher education were not helping students develop life-long learning skills, as learner performance was not found to be significantly increased over four years of college.

This action research helped Pacific Crest develop two key resources. The first was the Learning Process Methodology (LPM). The LPM is a relatively generic model for learning; it is content-independent and can be applied to nearly any learning situation. The potential of the LPM is that it can be used to teach students *how to learn*, as the LPM makes the learning process itself concrete and accessible to a learner. The second key resource was the Classification of Learning Skills (CLS). This organized list identified transferable skills that could be used in any learning context. The initial list included skills such as listening, persisting, transferring, and articulating an

idea. The potential of the CLS is that in strengthening learning skills, learners not only learn content more efficiently and successfully, but also become better at the task of learning, itself.

In 1991, Pacific Crest held its first "Problem Solving across the Curriculum" conference. The conference was attended by more than 100 faculty from various disciplines. The faculty set out to define a set of practices and approaches that would *empower* students to succeed. Many of the conversations regarding these practices lasted until the early hours of the morning. These discussions marked the beginning of an explicit philosophy of Process Education and inspired an annual meeting for this conference.

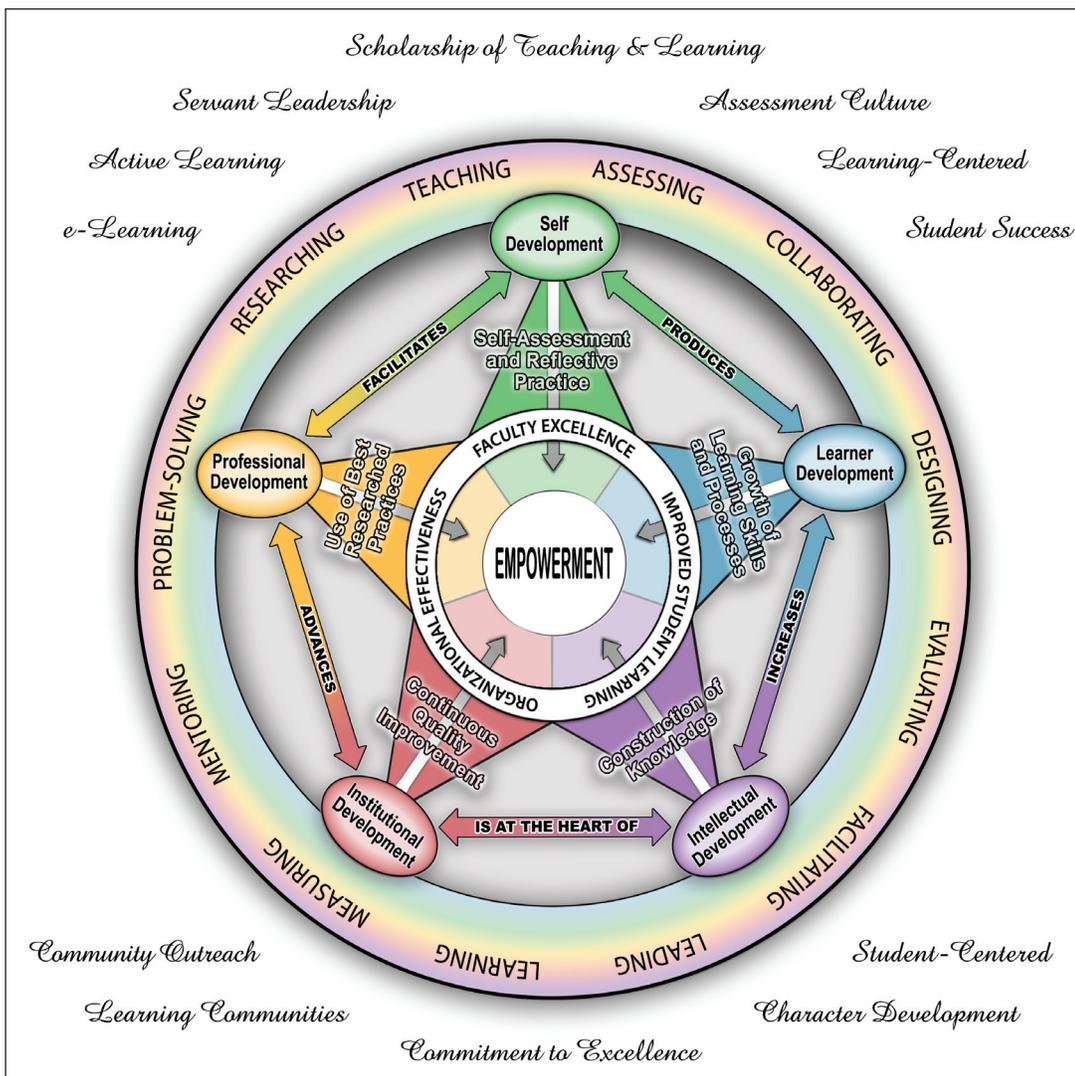
These practices and approaches were first implemented in 1994 at the first Learning-to-Learn Camp. This camp was geared toward a population of college students identified as "at-risk." The goal of the camp was to prove that all students could learn to meet the college's performance expectations and graduate with success. Over the course of a single week, all parties involved in the first Learning-to-Learn Camp began to understand how potentially powerful Process Education was. They observed as the application of PE principles began to literally transform individual lives, despite the fact that the supporting practices that currently existed for these camps were still in their infancy and a bit rough around the edges.

In 1994, Betty Lawrence and Dan Apple presented the paper "Education as a Process" at the International

Table 2 The Ten Principles of Process Education

1. Every learner can learn to learn better, regardless of current level of achievement; one's potential is not limited by current ability.
2. Although everyone requires help with learning at times, the goal is to become a capable, self-sufficient, lifelong learner.
3. An empowered learner is one who uses learning processes and self-assessment to improve future performance.
4. Educators should assess students regularly by measuring accomplishments, modeling assessment processes, providing timely feedback, and helping students improve their self-assessment skills.
5. Faculty must accept fully the responsibility for facilitating student success.
6. To develop expertise in a discipline, a learner must develop a specific knowledge base in that field, but also acquire generic, lifelong learning skills that relate to all disciplines.
7. In a quality learning environment, facilitators of learning (teachers) focus on improving specific learning skills through timely, appropriate, and constructive interventions.
8. Mentors use specific methodologies that model the steps or activities they expect students to use in achieving their own learning goals.
9. An educational institution can continually improve its effectiveness in producing stronger learning outcomes in several ways: (1) By aligning institutional, course, and program objectives; (2) By investing in faculty development, curricular innovation, and design of performance measures; (3) By embracing an assessment culture
10. A process educator can continuously improve the concepts, processes, and tools used by doing active observation and research in the classroom.

Figure 1 Compass of Higher Education



Teaching Effectiveness Conference. It received very positive reviews and later that year it became the first official articulation of Process Education by Pacific Crest. The Ten Principles of Process Education were drafted and, with only small changes made over the years, these ten principles still exist as the core principles of Process Education. These principles are listed in Table 2.

Current Impact of Process Education

Through the application of these ten principles, Process Education is actively transforming Higher Education by empowering faculty, students, and administrators. To date, Pacific Crest has visited more than 1,800 colleges and universities, facilitated faculty development for more than 20,000 educators, and worked with more than 25,000 students in classroom situations. Pacific Crest currently offers 22 different types of professional development institutes as well as customized workshops.

To effectively meet the growing demand for these institutes and workshops, Pacific Crest has established a growing number of Regional Professional Development

Centers across the United States. These Centers are dedicated to transforming the quality of teaching and learning in different areas of the country, leading to increased student retention and success at all levels. Each development center hosts three different faculty development institutes each year as part of its commitment to becoming a regional center. An individual center has the opportunity to choose its own events, in order to meet the unique needs, culture, and individual goals of each college or university. Other educational institutions in the area are invited to send participants to each institute in order to bolster the collaborative relationships among neighboring colleges (<http://www.pcrest.com>).

Pacific Crest’s view of the interrelated processes and dynamics of Process Education has evolved over the past 25 years and is perhaps most accurately captured in the *Compass of Higher Education* (Figure 1).

Research has been conducted on each process or area, as delineated by the Compass. Much of this research is ongoing and can be seen in the *Faculty Guidebook*,

a comprehensive resource on research within Process Education. The fourth edition of the *Faculty Guidebook* includes scholarship by more than 45 different authors, each of whom is dedicated to researching and sharing the most promising practices to improve teaching and learning. This edition contains 146 modules, blending theory and practice in an easy-to-use format on such topics as mentoring, assessment and evaluation, instructional design, program assessment, and creating quality learning environments. The *Faculty Guidebook*, which is also available in a web-based edition, is very accessible since it is packaged in short, comprehensive two to four page modules, thus making it easy for users to quickly absorb research, apply, and disseminate new teaching/learning knowledge and classroom innovations (<http://www.pcrest.com>).

Another result of research within Process Education, particularly on the critical topic of effective learning techniques, is the development of Process-Oriented Guided-Inquiry Learning (POGIL). POGIL is a technique that creates a research-based learning environment in the classroom or lab where students learn course content as well as learning process skills while working on guided-inquiry activities in small collaborative groups. The instructor facilitates this learning by asking guiding questions to teams as they work (www.pogil.org).

The individuals dedicated to the precepts of Process Education have formed a community of practice, the Academy of Process Educators. According to the Academy's web site (www.processeducation.org), the Academy "drives transformational change in education by generating, disseminating, and archiving research based on Process Education™ principles through:

- the advancement of scholarship in teaching and learning
- advocacy on key educational issues
- building an Academy research program
- the professional development of educators
- coaching and mentoring

[Furthermore], the Academy engages, supports, and collaborates with a community of educators by:

- delivering an annual conference
- producing a selective, peer-reviewed journal
- developing and endorsing position papers
- modeling key elements of Process Education
- facilitating member participation in other professional venues"

Process Education Growing into the Future

The end goal of Process Education is to create self-growers. Pacific Crest, the Academy of Process Educators, and the thousands of active users of PE are continually refining and strengthening both the development and application of Process Education. While practitioners of PE hold in common their belief in its underlying principles, the tools they use to effect the transformations that PE makes possible are as varied as the many disciplines in which they teach. It is this very diversity that makes the PE community so vibrant and such an promising arena for meaningful research and discourse.

Areas for future work in PE include developing technology that will assist educators in measuring performance, understanding what PE tools are most highly utilized by practitioners and determining if there is a pattern behind their usage, and examining and refining these tools to take into account student use and knowledge of emerging technologies.

Pacific Crest has identified that the use of technology for measuring performance as a way to help enhance performance is one of the most important transformational changes required by Higher Education. An increasing number of arenas including federal and state governments, accreditation agencies (both institutional and program) and other higher education stakeholders are requiring colleges to effectively use performance measures to document and improve student learning and growth. Pacific Crest has begun the process of creating the Performance Measurement and Enhancement System/Results Measurement System (PMES) which will collect, store, assess, and analyze measurement data to help educators and learners make better decisions for performance improvement. The data available through this system will allow PE researchers to expand and certify its inventory of measures more efficiently as well as enable the certification of new measures.

Another area for exploration and growth for process educators concerns emerging technologies. Social networking not only presents a way for friends to meet; it changes the way our youth learn. The concept of research has also begun to transition from being a primarily solitary venture to an opportunity for networks of practitioners and theorists to share resources with each other. Linear thought is being replaced by interconnected ideas. These changes trigger interesting questions: How will Process Education be transformed by this changing model? And how can PE take advantage of these changes to further facilitate learner growth and development?

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