

2001 ELAM Forum on Emerging Issues: Proceedings

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Innovative Thinking and Creativity Tools To Improve Academic Health Centers

Proceedings of the 2001 Forum on Emerging Issues

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Introduction: The ELAM Program and the Forum on Emerging Issues

The *Hedwig van Ameringen Executive Leadership in Academic Medicine (ELAM) Program for Women* continues the legacy of the Medical College of Pennsylvania, founded in 1850 as the nation's first medical school for women. The goal of ELAM is to increase the number of women chairs, deans and other senior academic administrators in medical and dental schools in the U.S. and Canada, and ultimately to improve healthcare for women, children and families. The program provides ELAM Fellows with continuing executive education; participants learn about such topics as converging paradigms of corporate, government and academic leadership; financial management; strategic planning and organizational dynamics; emerging issues in academic medicine; communications; and personal dimensions of leadership and career advancement. The 41 senior women medical and dental school faculty of the 2000-01 class already were leaders at their institutions, seeking to improve their executive leadership skills. These ELAM Fellows held administrative titles such as Chair, Vice Chair, Director, Department Head, or Associate Dean, as well as Professor or Associate Professor.

The **Forum on Emerging Issues** is the capstone event of the ELAM spring session, when Fellows are joined by senior delegates from their home institutions, most often the Deans, along with invited guests (see Appendix A for list of participants). Each year, the ELAM Forum provides a structure for focusing on the future of academic health centers (AHCs), exploring diverse perspectives of participants, and framing present efforts and future directions in healthcare education and delivery. The topic for the 2001 ELAM Forum was *Innovative Thinking and Creativity Tools To Improve Academic Health Centers*. The 2001 Forum was facilitated by Paul Plsek, Senior Fellow, Institute for Healthcare Improvement, author of *Creativity, Innovation, and Quality* (Quality Press, 1997), and consultant for change efforts in numerous healthcare systems and technology firms over the past two decades (see Appendix G).

The 2001 Forum inaugurated a partnership between academic health centers for the event. The Forum was supported by a generous gift from the University of Michigan's Medical School, School of Dentistry, and Office of the Provost (see Appendix B).



Background: Innovative Thinking and Creativity

“The challenge is to bring the full potential benefit of effective health care to all....This challenge demands a readiness to think in radically new ways about how to deliver health care services.”

Institute of Medicine

Academic health centers have used numerous approaches (continuous quality improvement; patient focused re-engineering; balanced score card; mission based management – to name just a few) to improve their quality and financial outcomes, and satisfaction of their constituents in their teaching, research and health care missions. There is a limit, however, to how far we can go simply improving incrementally the ideas that we already have designed into our organizations. *DirectedCreativity* (a trademark of Paul E. Plsek & Associates, Inc.) is a set of tools for stimulating innovative ideas to build on past improvement efforts. Thus, the objectives for the Forum were for participants to:

- 1) Understand why specific creative thinking techniques are essential for overcoming the limitations of our mind’s “self-organizing system.”
- 2) Identify three basic principles of creative thinking.
- 3) Apply a variety of *DirectedCreativity* tools to generate innovative ideas for improving the teaching and patient care missions of academic health centers.
- 4) Describe the leader’s role in creating a climate that supports innovation in an organization.

The basic heuristics (“rules of thumb”) for *DirectedCreativity* are provided in Appendix C. Briefly, *DirectedCreativity* can be described as:

- One in a series of steps in innovative thinking, which include:
 - Creative thinking – originating ideas
 - Application – rethinking processes, i.e., of health care delivery, education and research
 - Innovation – developing creative ideas and putting them into action
 - Leadership – establishing a supportive culture for creativity
- Creative thinking is the first step, and generates new ideas that:
 - Are often surprising
 - Others judge to be useful
 - Are generated by people who allow themselves to think flexibly
 - Come from the connecting and rearranging of knowledge
- And *DirectedCreativity* is the specific use of creative thinking, for:
 - Purposeful production of creative ideas in a given topic area
 - Followed up by deliberate efforts to implement some of those ideas.

Why don’t we see more innovative thinking occurring naturally in organizations? The problem is our *mental models*, which have become our natural way of seeing and explaining things, so they are difficult to see (“like water to a fish”). They filter our perception of reality. We find it hard to imagine any other way.

To break out of their mental models, Forum participants experimented with various tools. The tools of *DirectedCreativity* are based on three principles:

- (1) *attention* – identify the current mental model, the way we think about things now;
- (2) *escape* – creatively challenge it; and
- (3) *movement* – explore the new world, and see what comes up.

Innovative Thinking and Creativity Tools

Participants in the 2001 ELAM Forum experimented in small groups with some of the following tools, producing a long list of innovative possibilities. More than 100 practical tools for *Directed Creativity* may be found in the references cited in Appendix D.

Tool 1: Identifying and Challenging Simple Rules

Mental models are driven by *simple rules*, which we are often not aware of, but which drive us to maintain the status quo. Creative change requires us to identify (pay attention to) the current rule, escape (challenge) it, and then explore (movement) the world under the new rule:

- Identify
- Modify these simple rules.

For example, Forum participants considered what would happen if they moved from:

Current Apparent Simple Rule

Provide care based on face-to-face visits

New Simple Rule

Provide care based on information-giving and healing relationships

(More examples of identifying and questioning current simple rules may be found in Appendix E)

Tool 2: Mental Benchmarking (What would someone else think?)

A key concept of creativity is to connect streams of thinking that are not usually connected. Both reasoned and random connections will result in creative ideas. The steps of this process are to:

- Select a business or industry at random. Imagine that you're a CEO in that industry. What sorts of ideas and points of view would this CEO bring to the table if invited to join a strategic planning discussion at your academic health center?
- Describe what is natural for that business or industry. Write 3-5 statements of what is naturally, strategically important to it.
- Borrow concepts to apply to your situation. For each statement, come up with several thoughts about how the concept that is natural in that industry might be applied in an academic health setting.

Forum participants applied this to healthcare delivery, and very rapidly generated the following ideas for improving patient satisfaction.

<u>Industry/Company</u>	<u>Its Natural Idea</u>	<u>Application to Improve Patient Satisfaction</u>
Banking	Smart card	Use smart card to check into machine in clinic
Hotel (Ritz Carlton)	Information about client's special needs	Information about patient's special needs precedes patient's visit
Fast food	Drive up windows	Drive-by vaccinations; pick up prescriptions
Retail (Nordstrom)	Customer relations	Attention to relationship development

Tool 3: Creative Redesign of Processes – Element Modification

This tool also involves connecting streams of thinking that are not usually connected. The steps include:

- Prepare a flow chart of an important process.
- Look at each step and make a list of *all* the things you see in the scene – even the most mundane (e.g. telephone book, pencils). Generate a list of at least 15-20 items.
- “Modify the scene” – come up with at least 5 modifications of the scene, or alternative uses for things in the scene that would be innovations in the current process.
- The innovative ideas can be large or small, or totally outrageous. Capture them all.

When Forum participants applied this tool to the step in clinical care delivery for “helping patients remember instructions,” they generated the following ideas. (The complete list of ideas generated for all steps in clinical care delivery can be found in Appendix F).

People-oriented ideas

- Ask patient about daily regimen and tie meds to normal daily activities.
- Draw series of clocks and attach pictures of meds to the appropriate times.
- Have relative in room and explain to both.
- Draw sun as it crosses the sky. Tape pills to appropriate times.
- Tape pills to clock at appropriate times.
- Give patient a simple test to determine how they best take in information (verbal, written, etc.) and give instructions in that mode.

Technology-oriented ideas

- Record instructions on home answering machine.
- Give patient print-out of instructions and send via email.
- Tape/video instructions.
- Give electronic device such as Palm Pilot with reminders.
- Program computer to call at med times.
- Implant recorder in patient’s hearing aid that could play back instructions as needed.

Other simple tools were briefly mentioned.

Tool 4: Random Word

This also involves connecting streams of thought that are not usually connected.

- Select a word (noun) at random.
- Based on *whatever* that word brings to mind, list ideas that could be applied to your situation.
- Again, simple, complex, and completely outrageous ideas are all desirable!

Comments from Forum participants on the Tools:

“All was directly applicable to AHC, versus MBA work that is non-medical.”

“There can be a method to creative thinking... The tools are fabulous... There are easy ways for me to be creative – I didn’t really think I was creative.”

Tool 5: Creative “Stake Out”

This tool involves the key concept – noticing things that others fail to notice (attention).

- Select 3-4 areas in your institution you would like to “stake out” – places that students, patients and families frequent (e.g. cafeteria, clinic waiting area, library, auditorium, outpatient surgery entrance).
- Spend at least 10 minutes at each spot. Take in the sights, sounds and smells. Try to notice things you don’t normally notice. Consider:
 - What is happening there for students, patients or families?
 - What is missing?
 - What is easy and hard for them when they are in the place?
 - What would be nice to add?
 - What would be better ways to accomplish what is going on here?
 - Why haven’t we noticed this before?
- Make notes to share about what you noticed and what ideas came to mind.
- Extract larger strategic themes from your observations. After observing, you might conclude: “We don’t help people handle anxiety very well when they’re here...Patients and families really need basic information presented in ways they can understand...As faculty, we really treat students like second-class citizens here...”



Developing Creative Ideas and Putting Them into Action

Generating creative ideas is only one part in innovative thinking. The complete cycle involves:

Preparation

- Noticing, provoking

Development

- Harvesting (selecting), enhancing (working with ideas), and evaluating and judging the ideas generated
- Convergent thinking (short lists)

Imagination

- Exploring, piling up ideas, concepts and alternatives without judgment
- Divergent thinking (long lists)

Action

- Implementing – doing something that upsets the status quo

Forum participants used the Creative Redesign of Processes – Element Modification Tool to identify steps in the medical education process that could be changed (Preparation and Imagination). They then began the process of **Directed Creativity Development** – developing the ideas using a tool developed by Edward deBono to capture and enhance the ideas. Initial steps in the process include:

1. Identify *positive aspects* of the idea. Creativity research has shown that it is important to explore the positive aspects of a creative idea first.
2. Only then, in a separate action, identify *negative aspects or cautions* about the idea. Limit the number of negatives to be not greater than the number of positives.
3. Finally, identify additional data and information that would be needed to implement the idea.

The small groups developed ten idea themes. The idea to explore tracking clinical experience was chosen by seven groups, and is shown below. The entire list of themes and their development can be found in Appendix G.

Plsek briefly described the additional step of enhancement to complete the Creative Idea Development process and put it into action.

Creative Idea Enhancement

- *Shaping*. How the idea can be modified to address the Negatives and Cautions that could cause rejection. How the idea compares to what it's replacing. How the idea can be enhanced, expanded or scaled back to be workable.
- *Tailoring*. How the idea can be modified to even better fit the needs of those who will evaluate it next.
- *Strengthening*. How the power or value of the idea can be increased.
- *Reinforcing from potential faults or defects*. How the weak points can be addressed.
- *Looking towards implementation*. How the idea can be enhanced, and who needs to be involved, to increase the probability of its being implemented. How the idea can be tested and prototyped on a small scale.

This last point was pointed out as being extremely critical – get the ball moving – take action and make incremental movement forward.

Track Clinical Experience in Palm Pilot into Central Databank (or beam to national database)

The objectives of this creative idea are for medical students to learn in a variety of ways and be able to document that learning. Methods might include (1) going to “teaching patient clinic,” (2) simulated clinical patients, (3) individual patients, (4) telemedicine, and (5) library of video patients. For such distributed learning, it will be important to track the progress of students in a simple fashion.

Positive Aspects of the Idea:

- Catalogue actual experiences; comparison and uniformity of educational experience; uniformity of skill sets
- Better data; accuracy/timeliness; skills easy to track
- Portable; ease of data entry; convenient
- Comprehensive education for students
- Defines expectations
- Allocation of learning resources
- Cross discipline
- Fund through National Institute of Health Education
- Increase enthusiasm for learning
- Complement with experiences that are lacking
- Increase board performance

Negatives and Cautions About the Idea:

- Logistics complex; time invested in identifying patients and delivery mechanics; need to develop cases/skills/diagnostic requirements; can we actual find the cases at the times where they are needed?
- Technology infrastructure dependent; 25% will be lost; is technology available?
- Difficult for disorganized individuals
- Confidentiality issues
- Loss of contact with mentor
- Consistency of data entry
- Action on deficiencies
- Does experience translate to increased board performance?
- Require patient contact be maintained and use other teaching tools as supplements
- What happened to the content?

Data and Information Needs to Implement the Idea:

- What is the current patient mix? Does it vary depending upon mix of clinical teaching sites?
- Performance and comparison with national data; current board scores
- Current performance on OSCE’s
- Track skills required
- Cost
- Investigate auto manufacturers for their type of educational experiences
- Data system and IS support required
- Evaluation of competencies
- Benchmarking
- Pilot data

“Good opportunity to brainstorm ‘out of the box.’ Opportunity to interact closely with individuals with shared interests.”

Establishing a Supportive Culture for Creative Ideas in Your Organization

The final phase of the 2001 Forum on Emerging Issues focused on how to take the individual and group work to the organizational level. Plsek emphasized the following concepts:

- Creativity develops best when an organization is understood as a complex adaptive system rather than a machine
- To advance a creative idea, focus on *attraction*. Identify a group or individual who you currently think of as “resistors.” Then make a 180° mental turn and consider them as “embracers of change.” Ask, what did they easily change in the past? Take the time to understand their rationale. Have conversations, with true curiosity, about what they like about their work, what they dislike, what they seem to want really deep down. Then consider how you can make your idea more attractive to them.
- Accept the fact that there is a normal *spectrum of responses* to change – from innovators, early adopters, early majority, late majority, and finally laggards. Importantly, realize that everyone displays these behaviors in some situations, e.g. we may be innovators regarding adoption of information technology, and laggards regarding redefinition of our academic disciplines.

Analysis of Organizational Culture for Support of Innovation

The speed and frequency of creative innovation depends upon the organizational culture. Forum participants individually analyzed their organizations on each of the following nine dimensions, rating each from:

0 = We have absolutely no skills, systems or recent experiences on this dimension.

5 = We are similar to the average academic health center in terms of skills, systems and experiences on this dimension.

10 = We have outstanding skills, systems and experiences in this dimension.

Dimensions for the Successful Innovation Culture

- | | |
|-----------------------------|------------------------|
| • Risk taking | • Tools and techniques |
| • Resources | • Past history |
| • Widely shared information | • Rewards system |
| • Specific targets | • Team environment |
| • Test beds | |

Participants from the same institution then shared their analysis, and found the resulting dialogue to be revealing and informative. In many cases, their analyses had reached quite different conclusions. The groups discussed ideas for improving the situation for one of the lowest dimensions within their organizations.

“Plsek was the perfect way to end ELAM 2000-2001...His dynamism, heart, smarts, innovative thinking/creativity, and ability to inspire, stimulate, engage and cheer his audience are truly amazing.”

Resources and Practices Supporting an Innovative Culture

The final discussion centered on resources and practices necessary for innovation. Participants also shared institutional practices that fostered creativity.

Selected Organizational Resources and Practices for Innovation

Ideas for good practices

- Set aside a portion of the budget for innovation
- Set up an easy to access process with a system of “gates” that innovators can pass through to get progressively more resources
- Use the same process that covers work when individuals are away to provide protected time for innovation
- Pair formal leaders with innovators to provide authority to act
- Locate natural champions for the innovation, work with them to create a test bed, and focus resources there
- Provide protected time for past innovators to serve as coaches
- Tell stories of the history of innovations, where success was more a matter of intuition and creativity than analysis and incremental improvement
- Meet with innovators and ask them what they would consider a “reward,” and set up processes that deliver on as many of these as possible
- Provide team building, personal styles assessment, and conflict management training for innovation teams

Examples

- 1/3 revenues come from products that did not exist 3 years ago (3M)
- Can apply for 10% protected time and modest resources. If idea is successful, more resources can be applied for (Mayo)
- Very open to small pilot projects (U. Ottawa and other AHCs)
- Send outside of health care environment to see interesting ideas--“visit a different village”
- Pilot projects sanctioned by dean
- Pilot projects of alternative curricula
- Departmental education innovations
- Faculty often regard time and recognition as equal to, if not more important than, salary increases
- Faculty development programs in these areas

Leaders’ Roles in Innovation

Forum participants left with the following ideas about roles they can play in fostering an institutional culture for innovation:

- Articulate the business case for innovation
- Encourage identification and escape from the current simple rules that govern the culture, to identify creative ideas
- Provide safe space and resources for creativity
- Set up methods for deliberate development, enhancement, and testing of creative ideas
- Create attraction and rewards to foster creativity
- Spread innovation throughout the organization

Comments from Participants

Forum participants cited numerous insights and “aha’s.” And they wanted even more time and tools for how to implement creative ideas. A few examples:

“Learned how creative ideas are developed in my institution, and why they remain great ideas that have not been acted upon.”

“We should spend more time in creativity-generating sessions as opposed to dead meetings.”

“The importance of creative thinking was reinforced, but even more the potential for drawing it out of people who don’t think of themselves as particularly talented in that way.”

“Great to work with the Deans. It gave me insight into how they see themselves and each other, and how creative they are.”

At least one leader left the Forum and planned to bring *Directed Creativity* into his university, with the assistance of the ELAM Fellow, within the next three months.

Appendices

- A. List of 2001 ELAM Forum Participants**

- B. The University of Michigan and ELAM Program Partner to Support the 2001 ELAM Forum on Emerging Issues**

- C. Eight Basic Heuristics of *DirectedCreativity***

- D. Recommended Reading on Creativity**

- E. Directed Creativity –Ideas Generated from Charting the Clinical Care Delivery Process Part 1 – Ideas from the Flow Chart**

- F. Directed Creativity –Ideas Generated from Charting the Clinical Care Delivery Process Part 2 – Challenging “Simple Rules” that govern health care delivery today**

- G. Directed Creativity – Ideas Generated for Improving the Medical Education Process**

- H. Forum Faculty**

Appendix A

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Appendix B

The University of Michigan and ELAM Program Partner to Support the ELAM Forum on Emerging Issues

The University of Michigan is pleased to help support the *Hedwig van Ameringen* Executive Leadership in Academic Medicine (ELAM) *Program for Women*, especially in a year in which two U-M women faculty were selected as Fellows. The U-M Medical School, the School of Dentistry and the Office of the Provost have pledged a total of \$40,000 for each of two years to co-sponsor the two-day Forum on Emerging Issues held at the conclusion of the year-long fellowship program.

The U-M's commitment to advancing the careers of women in medicine and dentistry dates back to the 1800s and continues today. In 1871, the first female student graduated from the Medical School; the School of Dentistry graduated two women in 1880, just four years after its founding. A decade later, the first black woman to receive a dental degree in the United States graduated from U-M. This year, for the first time, more than half of first year School of Dentistry students are women. In addition, three of the School's six associate and assistant deans are women. In the Medical School, nearly half the students and three of eight associate and assistant deans are female.

Says U-M Medical School Dean Allen Lichter, M.D., "We are heavily committed to seeing women advance into leadership in academic medicine, and we recognize that this needs to happen not merely by accident, but by design. ELAM is one of the strongest programs in the country for introducing women to the issues of academic medicine and helping them build the skills needed to advance their careers."

U-M School of Dentistry Dean William Kotowicz, D.D.S. adds, "ELAM offers an excellent opportunity for participants to network with other women in leadership roles throughout the country. I believe it is especially important for women dental faculty to interact with their peers in medical science, and this fellowship encourages such interaction. I heartily support the program."

Lisa Tedesco, Vice President and Secretary of the University of Michigan and a professor in the School of Dentistry, was one of the two first dental faculty women accepted into the ELAM program in 1996. "The program offered me a real opportunity to sharpen existing skills and gain some new ones," she says. In particular, she says she appreciates the training she received in budgetary and programmatic planning. The ELAM program also offered invaluable guidance in setting goals and standing up to the kinds of challenges that often derail women on their way to leadership positions.

In addition to Tedesco from the School of Dentistry, three U-M Medical School faculty have taken part in the ELAM program, including two in the current class. They are:

Class of 2000-2001

Hope Haefner, M.D., Associate Professor in the Gynecology Division of the Department of Obstetrics and Gynecology, and director of the Center for Vulvar Diseases. A specialist in diseases of the vulva, including the chronic pain condition vulvodynia, Haefner is active in gynecologic pathology research. She is co-author of *A Classical Approach to Vulvar Disease*, a CD-ROM from the American College of Obstetrics and Gynecology designed to help physicians identify and treat vulvar diseases.

Denise Tate, Ph.D., Associate Professor and Director of Research in the Department of Physical Medicine and Rehabilitation, and Director, Model Spinal Cord Injury (SCI). A clinical psychologist who

specializes in the psychosocial aspects of spinal cord injury, mild brain trauma and chronic pain, and in depression and post-polio adjustment, Dr. Tate is also a member of the U-M Comprehensive Cancer Center.

Class of 1999-2000

Eva Feldman, M.D., Ph.D., Professor, Department of Neurology, Co-Director of the Amyotrophic Lateral Sclerosis (ALS) Clinic, and faculty member in the Neuroscience Graduate Program. As a clinician, Dr. Feldman is especially interested in neuromuscular disorders, neuropathy, and amyotrophic lateral sclerosis, also known as Lou Gehrig's Disease. She also heads a basic research laboratory that studies the role of the insulin-like growth factors in the origin and treatment of neurological disorders.

Appendix C

Eight Basic Heuristics of Directed Creativity....

www.directedcreativity.com

The heuristic "rules of thumb" for Directed Creativity in the table below are based on a modern understanding of how the mind works as a adaptive, self-organizing patterning system; as well as on the practical experience of seasoned creative thinkers.

Basic Heuristics for Getting Started in *DirectedCreativity*

1. Make it a habit to purposefully pause and notice things.
2. Focus your creative energies on just a few topic areas that you genuinely care about and work on these purposefully for several weeks or months.
3. Avoid being too narrow in the way you define your problem or topic area; purposefully try broader definitions and see what insights you gain.
4. Try to come up with original and useful ideas by making novel associations among what you already know.
5. When you need creative ideas, remember: attention, escape, and movement.
6. Pause and carefully examine ideas that make you laugh the first time you hear them.
7. Recognize that your streams of thought and patterns of judgment are not inherently right or wrong; they are just what you think now based primarily on patterns from your past.
8. Make a deliberate effort to harvest, develop, and implement at least a few of the ideas you generate.

The Heuristics Further Explained....

#1 Make it a habit to purposefully pause and notice things.

The first heuristic suggests that we make it a habit to purposefully pause and notice things because we know that our automatic perception processes miss a great deal of what goes on around us. The importance of learning to perceive the world in a fresh way is clearly a part of the generally accepted theory of creative thinking. If creative thinking is the novel association of existing concepts in memory, then it follows naturally that it is useful to create a storehouse of concepts. When you pause and notice, you are not looking for anything in particular. You do not need to know how you are going to use the information. You are simply storing up concepts ([de Bono, 1992](#)).

The second heuristic -- focus, care and work purposefully -- is based on the research into the lives of great creators. Creative ideas rarely come "all of a sudden." Good creators work diligently with many ideas, in a specific topic area, over an extended period of time. (For more about the research into creative lives, see [Wallace and Gruber, 1989](#); [Shekerjian, 1990](#); and [Weisberg, 1993](#).)

#2

Focus your creative energies on just a few topic areas that you genuinely care about and work on these purposefully for several weeks or months.

#3

Avoid being too narrow in the way you define your problem or topic area; purposefully try broader definitions and see what insights you gain.

Heuristic number three -- define the topic broadly -- encourages us to maintain maximum space for creative maneuvering. [Nadler and Hibino \(1994\)](#) give a concrete illustration of this heuristic in their "case of the slippery packing crates." The case involves a national manufacturer of consumer goods that was about to make a multi-million dollar investment in loading dock automation to eliminate the problem of damaged crates. A young staff engineer saved the company a great deal of money and effort by suggesting a broader view of the topic. While the immediate need seemed to be for creative ideas in the narrowly focused area of eliminating damage to crates, a broader statement of the issue was to find creative ways to distribute the company's goods to the marketplace undamaged. This broader statement of the creative focus led to major restructuring of the company's warehousing network. This creative approach reduced the number of handling points; both reducing shipping damage and lowering costs.

The fourth heuristic -- make mental associations -- reminds us to take the basic mental action that underlies all creative thought. (See, for example, [Koestler, 1964](#).) The zip-lock storage bag is a good example of association as creativity. The innovation here was in the association of a zipper from the realm of clothing with a bag from the realm of food storage. This heuristic represents an essential attitude for the creative person. The creative person knows that there are an infinite number of ideas "out there," because there are so many possible permutations among known concepts. The creative person never feels defeated, or at the end of the road of ideas. There is always another idea to be had by combining something that has not been combined before. All that is required is flexibility and the perseverance to keep on trying.

#4

Try to come up with original and useful ideas by making novel associations among what you already know.

#5

When you need creative ideas, remember: attention, escape, and movement.

The fifth heuristic -- attention, escape, and movement -- further directs our basic mental mechanics. These three mental activities underlie all tools for directed creativity. When you need to be creative, pay attention to things in new ways, escape your current mental patterns associated with the topic, and keep moving in your thinking to avoid premature judgment and the "way we've always done it" thinking.

Heuristic number six encourages us to pause on ideas that make us laugh. Though we are not yet sure, it appears that laughter might be a

#6

Pause and

physiological reaction to a novel connection among neurons in the brain. This explains why we laugh at jokes (the punch line makes a connection we were not expecting) and smile when we finally figure something out. The "pause on ideas that make you laugh" heuristic calls us to resist the urge to move on when someone suggests a laughable concept. Working with such ideas can be one of the most productive things we can do when we desire innovation. In DirectedCreativity, laughter is serious business.

carefully examine ideas that make you laugh the first time you hear them.

#7

Recognize that your streams of thought and patterns of judgment are not inherently right or wrong; they are just what you think now based primarily on patterns from your past.

The seventh heuristic in the set -- your judgments are not inherently right or wrong -- reminds us that our mental processes of judgment are emotion-laden. This heuristic calls us to keep an open mind and cultivate flexibility; essential ingredients in creative thinking. Of course there are moral and theological absolute truths; but we are not talking about that here. We are talking about business problems... whether a computer has to have a keyboard... whether a bank has to have a building. The vast majority of what we do in business and daily work has nothing to do with absolute truth. But so many of us act as if it does!

The last basic heuristic -- implement a few ideas -- is based on the important distinction between mere creativity and productive innovation. The true innovator is action-oriented in her approach to things. In business, creative ideas have little real value until someone puts them into action. Have you ever seen a product or service offered in the marketplace and thought to yourself, "Hey, I thought of that once before"? How many potential millionaires are there in the world who missed out because they did not act on their creative ideas? How many companies have missed the chance to lead the market?

#8

Make a deliberate effort to harvest, develop, and implement at least a few of the ideas you generate.

No Special "Gift" Required

These eight basic rules of thumb can be practiced by anyone. No special "gift" or "creative talent" is needed. The basic heuristics of *Directed Creativity* lead to productive expertise. While using the heuristics of *Directed Creativity* is no guarantee of success, knowing such heuristics shortens the learning curve and raises the chances of success.

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Appendix D

Recommended Reading on the Topic of Creativity

Brief Article of Application to Healthcare Delivery

- Plsek PE. Innovative thinking for the improvement of medical systems. *Annals of Internal Medicine*. 21 September 1999, 131(6):438-444. This short article provides an overview of the theory and practice of creative thinking, with application to the improvement of health care delivery systems.

More Extensive Reading on Creative Thinking and Organizational Innovation

These five books will give you a deep view of the essential ideas that make up the modern view of creativity. Anyone who is really serious about being a more creative thinker should read at least the first three. These and 50+ other great books and audio tapes on creativity are available through The Creativity Bookstore at <http://wwwDirectedCreativity.com>

- Paul E. Plsek, *Creativity, Innovation, and Quality*. ASQ Quality Press, 1997.
This book takes you through *DirectedCreativity* from first principles to application. The first third of the book covers theory of directed creativity, including the mechanics of mind and heuristics for directed creativity. The second third presents the three principles behind all tools for creative thinking and reviews the hundreds of tools available. The final third covers application of directed creativity to reengineering, design, customer needs analysis, and problem solving.
- Edward de Bono, *Serious Creativity*. Harper-Collins, 1992.
Edward de Bono is a prolific writer on the topic of thinking in general and creative thinking in particular. Part 1 of this text will introduce you to such classic de Bono-isms as “lateral thinking” and the “self-organizing mechanism of mind.” Though de Bono never refers directly to the research from the cognitive sciences, you will find his work consistent with it. Part 2 covers tools and techniques for creative thinking, while part 3 discusses issues of organization-wide creative thinking. de Bono’s style is crisp, sometimes too crisp, and the book is fun to read.
- James M. Higgins, *101 Creative Problem Solving Techniques*. Winter Park, FL: New Management Publishing Company, 1994.
This is my favorite catalogue of creative thinking tools. Each of the 101 tools is explained in detail; the book will provide you with plenty of food for thought. The presentation is organized around the Creative Problem Solving (CPS) model, but the translation to the *DirectedCreativity* Cycle is easy.
- D. N. Perkins, *The Mind’s Best Work*. Harvard Univ. Press, 1981.
This classic text takes you through the essential theory behind the modern view that creativity is not the result of some magical genius that only a few possess. While Perkins is a great scholar and there are many research citations, the book itself is written in an easy-to-read, populist style.
- Robert J. Sternberg, ed. *The Nature of Creativity*. Cambridge Univ. Press, 1988.
This is the most up-to-date, comprehensive scholarly reference on the topic. The 17 chapters are well written and relatively free from the repetition one sometimes finds in a collected work such as this. The contributors’ list reads like a who’s who of psychologists, educators, philosophers, and computer scientists who are currently working in the field of thinking about creativity.

Appendix E

Directed Creativity –Ideas Generated from Charting the Clinical Care Delivery Process*

Part 2 – Challenging “Simple Rules” that govern health care delivery today

Some simple rules regarding clinic appointments, waiting and intake processes – rules that are viewed as “norms” - were identified that need to be re-examined. Additional creative alternatives were identified, and are included below as indented bullet lists.

Rule 1. An appointment is needed for care.

- Is this true and why?
- What are alternatives?
- Acuity, triage, access by need

Rule 2. Our current hours of operation are the right ones.

- Do they need to be longer?

Rule 3. Appointments are one patient at a time.

- Group or simultaneous?

Rule 4. Doctors are assigned time blocks per patient.

- Move patients into another activity
- Find way to change the lines and keep them moving
- Find a way around lines

Rule 5. Our current approach to waiting time is the best way possible given the situation.

- Incentives and disincentives, predictable, informed, productive for patients.
- Telemedicine - Bonus points - Business Center
- Flexibility located “clinics” close to Libraries, Manicurist, Massage, Food, etc.
- Better time information: “on time,” 25 minutes late
- Exercise opportunity
- Drive thru appointment; register later (“ Doc Now, Paper Later”)

Rule 6. Our current approach to intake is the most appropriate.

- Multiple simultaneous evaluations

Rule 7. Constraints of current process and inefficiencies have to be lived with.

- Protocols
- Pre-visit background information and HPI to clinic (electronically)

Rule 8. Assumption of resources, tech savvy and literacy/language of our patients is appropriate.

- Take clinic to those who need it
- “Clinic has appointment with patient”
- How to predict density of need?

Appendix F

Directed Creativity –Ideas Generated from Charting the Clinical Care Delivery Process*

TOOL: Creative Redesign of Processes—Element Modification

Part 1 – Ideas from the Flow Chart

Steps in Flow Process	Ideas Generated by Modifying Elements in the Step
STEP #1 SEE NEED The key is information...	<ul style="list-style-type: none"> ▪ Triage system to meet patients’ needs for information ▪ Call mother 212-686-5580 ▪ Lay person/friend ▪ Web – “Ask the expert” ▪ Ask your doctor/nurse by phone ▪ Have body-monitoring device
STEP #2 MAKING APPOINTMENT	<ul style="list-style-type: none"> ▪ How to make appointment: call, on-line, no time constraints ▪ No appointment needed – walk in or ask question on-line/solve problem(s) with visit ▪ Pool of electronically accessible experts 24/7 ▪ Phone into our clinic computer; could also use for register, check in, and history ▪ Access computer, voice activated, touch activated ▪ ‘Dial a Doc’ ▪ Web-based appointments ▪ Team approach – do it while in clinic as part of closure to visit ▪ Give bonus points for keeping appointments
STEP #3 CHECK IN AND REGISTRATION	<ul style="list-style-type: none"> ▪ Patient enters information directly into the computer ▪ Mail in registration ahead of time ▪ Card swipe system; includes medical history; begins in the parking lot ▪ Doctors go to the work site ▪ Eliminate the waiting room ▪ Begin with a focus group consisting of patients
STEP #4 THE WAIT	<ul style="list-style-type: none"> ▪ Do away with it; eliminate no-value wait time ▪ Go to open access system ▪ Transform time into something valuable; provide educational videos, games ▪ Insert card and: <ul style="list-style-type: none"> ○ Card triggers information for health care team and sets in motion certain activities that will save time for patient ▪ Someone greets patient ▪ Go for mini-massage ▪ Beauty services connected to health, e.g. foot massage ▪ Volunteer focuses patient to ask doctor/could be pre-call/cable channel ▪ Recliners that rock ▪ Healthy fast food ▪ M.D. pager ▪ Individual educational experiences ▪ Internet access

STEP #5: INTAKE	<ul style="list-style-type: none"> ▪ Go directly to room ▪ N.P. screens (triage) ▪ Direct access to doctor ▪ Remove steps not relevant to visit - Breathing yes/no ▪ Computerized intake for questions and update record ▪ Physician/provider meet patient at door to escort to room ▪ Functional assessment ▪ History in waiting room and then reroute if necessary ▪ Scanning of sorts
STEP #6: HISTORY AND PHYSICAL EXAM	<ul style="list-style-type: none"> ▪ Card with chip in (records) ▪ Multi-language card ▪ Home history and physical exam – send via telephone, e-mail ▪ Telemedicine ▪ Central location/shopping mall/apartment building ▪ Giving patients technology (Palm V) to report history ▪ Customization of patient and doctor relationship
STEP #7: TESTS AND WORKUP	<ul style="list-style-type: none"> ▪ Computer access for scheduling for tests; finding access to doctor ▪ All test are derived from either a smear or saliva ▪ Patient enters symptoms into computer; then necessary tests determined by software ▪ Results are sent to a common database ▪ Patients go to a drive in window and expectorate and stick arm out ▪ Use of “tricoder” technology ▪ Roaming phlebotomists ▪ Results go directly to the pagers of the physicians
STEP #8: INTERACTION WITH CLINICIAN	<ul style="list-style-type: none"> ▪ Deal with their “list” earlier (their expectations) ▪ Lab results accessed directly by patient ▪ When value is normal; does not need to be seen by a MD ▪ Do blood drawing in clinic (medical student) ▪ Modular testing ▪ Lab reports directly both to ordering MD
STEP #9: HELP PATIENTS REMEMBER INSTRUCTIONS	<ul style="list-style-type: none"> ▪ Ask patient about their daily regimen; tie meds to normal daily activities; associate meds with when they use their cane, or go to bathroom ▪ Draw series of clocks, attach pictures of meds ▪ Give an electronic device such as palm pilot with reminders ▪ Tape pill to clock; draw sun as it crosses the sky; tape pills to times of day to be taken ▪ Give patient printout of instructions; send instructions via e-mail ▪ Self dispensing machine ▪ Tape/video instructions ▪ Record on home answering machine ▪ Have relative in room ▪ Program computer to call at med times ▪ Implant recorder in patient’s hearing aid that could play back instructions ▪ Different modes – have patient take a simple test to determine how they best intake information (verbal, written, etc.) and then give instructions in that mode ▪
STEP #10: CHECK OUT	<ul style="list-style-type: none"> ▪ Collect \$ up-front ▪ Menu driven checkout process (explicit) ▪ Bill directly to card/digital ▪ Express check out if you don’t need future appointment. ▪

Appendix G

Directed Creativity – Ideas Generated for Improving the Medical Education Process*

Ten idea themes were generated from small groups that identified aspects of the medical education process and then used Creativity Tools to generate ideas on how to improve this process.

Idea # 1: Track Clinical Experience in Palm Pilot into Central Databank (or beam to national database) to learn by (1) going to “teaching patient clinic,”(2) simulated clinical patient, (3) individual patients, (4) telemedicine, (5) library of video patients (Combined Idea from 7 Groups)		
Positive Aspects of Idea:	Negatives, Cautions About Idea	Data, Information Needs to Implement Idea
<ul style="list-style-type: none"> • Catalogue actual experiences; comparison and uniformity of educational experience; uniformity of skill sets (5 groups) • Better data; accuracy/timeliness; skills easy to track (6) • Portable; ease of data entry; convenient (5) • Comprehensive education for students • Defines expectations • Allocation of learning resources • Cross discipline • Fund through National Institute of Health Education • Increase enthusiasm for learning • Complement with experiences that are lacking • Increase board performance 	<ul style="list-style-type: none"> • Logistics complex; time invested in identifying patients and delivery mechanics; need to develop cases/skills/diagnostic requirements; can we actual find the cases at the times where they are needed? (5) • Technology infrastructure dependent; 25% will be lost; is technology available? (6) • Difficult for disorganized individuals • Confidentiality issues (2) • Loss of contact with mentor • Consistency of data entry (2) • Action on deficiencies • Does experience translate to increased board performance? • Require patient contact be maintained and use other teaching tools as supplements • What happened to the content? 	<ul style="list-style-type: none"> • What is the current patient mix? Does it vary depending upon mix of clinical teaching sites? • Performance and comparison with national data; current board scores (3) • Current performance on OSCE’s • Track skills required • Cost (2) • Investigate auto manufacturers for their type of educational experiences • Data system and IS support required (2) • Evaluation of competencies • Benchmarking • Pilot data

Idea #2: Integrate Basic and Clinical Science throughout Four Year Curriculum – Seamless Curriculum (Combined Idea from 4 Groups)		
Positive Aspects of the Idea	Negatives, Cautions About Idea	Data, Information Needs to Implement Idea
<ul style="list-style-type: none"> • More complete, enjoyable learning (3 groups) • Increased test scores (3) • Enhanced life long learning (2) • Collaborative, translational research encouraged → increased funding (3) • Better prepared students • Get better students • Improved reputation of school • Better decision makers • Better patient outcomes • Challenges faculty 	<ul style="list-style-type: none"> • Higher utilization of resources • Redundancy of curriculum • Labor intensive with faculty (3) • Test results could decrease • Logistics – off campus, need telehealth (3) • Cultural changes – need champions (2) • High maintenance • More CME • Faculty morale 	<ul style="list-style-type: none"> • Resource requirement • Faculty availability and time for development of teaching cases • Faculty satisfaction, retention, promotion and tenure (3) • Student satisfaction (2) • Incremental costs and administrative costs identified (3) • Benchmarking against other schools (3) • Test results (3) • Course content • Match results

Idea #3: The National Institute for Health Education Research (Combined Idea from 4 Groups)		
Positive Aspects of Idea	Negatives, Cautions About Idea	Data, Information Needs to Implement Idea
<ul style="list-style-type: none"> • Generate innovation in education (comment from 3 groups) • Decrease debt load (2) • Help promotion and tenure for education-focused faculty (3) • Generate evidence-based health education information (2) • Provide financial support for education-focused faculty (2) • Improve quality of education (3) • Fund outcome studies • Generate positive momentum for medical education • Promote competition → best ideas • Improve medical education 	<ul style="list-style-type: none"> • Assumes negative – that something is “broken”; trying to fix something not broken? (2) • Don’t need new institute • Is government ready for such an effort? (2) • Will it divert resources especially, from research? (2) • Is it sustainable? (2) • Society does not value “education and teaching” • How would this make a difference? • Violates/threatens federal cost cutting efforts (2) • Delayed buy-in by foundation seed funding agencies (2) • Regional implementation conflicts with national priority (2) 	<ul style="list-style-type: none"> • Need input from public/consumer groups • Need government (e.g. NIH) input • Determine what is out there already • How could this be incorporated into existing institutes? • Poll IOM, Fetzer, RWJ, Hartford, PEW, Kellogg re acceptability (2) • Develop a business plan (2) • Survey AHCs and states on need/benefit (2)

Idea #4: Individualized Educational Portfolio (Combined Idea from 4 Groups)		
Positive Aspects of Idea	Negatives, Cautions About Idea	Data, Information Needs to Implement Idea
<ul style="list-style-type: none"> • Flexibility; enables individualized learning plan/progression; accommodates individual learning styles; allows student strengths to be maximized (comments from 3 groups) • Facilitates life-long learning (3) • Enhances educational outcome • Decreases attrition • Increases student satisfaction (2) • May lead to a broader group applying to medical school • Enables integration into teams • Allows faculty to be engaged continuously • Allows time for students to explore; allows time for students to generate additional money • Student centered (2) • Global (3) • Accommodates diversity (2) • Adult learning 	<ul style="list-style-type: none"> • Too much flexibility for inflexible traditional curriculum; doesn’t fit in with current calendar; doesn’t fit in with exams to follow progress; Scheduling problems (residents) (3) • Too much variability of competency levels (everybody’s not on the same page at the same time), consistency issues (3) • Lose sense of class camaraderie/cohort; risk of eroding socialization skills; learning in isolation (3) • Faculty labor intensive; more availability over time for faculty; time consuming (3) • Lack of time limit - \$; question – more expensive?; not as efficient (2) • Students who need structure may get lost; doesn’t focus (2) • Lack of role models • Decentralized • Rites of passage lacking • External LCME/AAMC requirements • Sell to faculty/students 	<ul style="list-style-type: none"> • Essential to assess regularly where students are in learning process • Need graduation rates, certification and licensure results • Attrition rates • Content/data adaptable to educational portfolio use • Cost effectiveness (2) • Estimate resource needs for faculty • Survey and focus groups, with applicants, etc (2) • Access learning styles → what do they do to class teaching styles • Pilot project

	<ul style="list-style-type: none"> • Evaluation – faculty development cost • Work force needs 	
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Idea #5: Patients as Teachers, Evaluators of Competence, Evaluators of Cultural Competence – Quality Control Patients (Combined Idea from 3 Groups)

Positive Aspects of Idea	Negatives, Cautions About Idea	Data, Information Needs to Implement Idea
<ul style="list-style-type: none"> • Students more rounded • Contribute to education – relevance at low cost • Contribute to cultural understanding • Students more competent/relevant • Administrative requirements now • Different perspective • Assesses area previously unassessable • Supports values one claims are important • Increase patient adherence/competent (2) 	<ul style="list-style-type: none"> • Long startup time line – teaching patients (2) • Faculty resistance to loss of control (2) • Patients’ resistance to role (2) • Ethics review (2) • Costly • Cumbersome • Validity/standardization 	<ul style="list-style-type: none"> • Assessment tools for patient assessment components (2) • Pilot feasibility – who will participate (faculty, patients and students) (2) • Assess added time required – impact on space, time and bottom line (2) • Data from other industries • Pilot data • Simulated patients in OSCE’s can provide some data

Idea #6: Nodal Assessment of Clinical Competence (2 Groups)

Positive Aspects of Idea	Negatives, Cautions About Idea	Data, Information Needs to Implement Idea
<ul style="list-style-type: none"> • Can reduce cost of education; reduce costs related to non-frequent testing (2) • Flexibility in time lines; student flexibility regarding testing time (2) • Honor learning style; individualize to students (2) 	<ul style="list-style-type: none"> • Cost/time • Faculty resistance (2) • Boards/ exams resistance (2) • Decrease prestige for institution; may backfire re student recruiting (2) 	<ul style="list-style-type: none"> • How many students would opt for this? (2) • How many faculty want it? Would participate? (2) • Involve schools who’ve implemented this

Idea #7: Continuous Quality Improvement in Medical Education (1 group)

Positive Aspects of Idea	Negatives, Cautions About Idea	Data, Information Needs to Implement Idea
<ul style="list-style-type: none"> • Different perspective incorporated • Implement values we espouse • Meet administrative requirements <p>Comprehensive</p>	<ul style="list-style-type: none"> • Costly • Cumbersome • Assessment • Validity and standardization 	<ul style="list-style-type: none"> • Research how other industries do this • Cost assessment for implementation • Pilot program – resource needs

Idea #8: Competency Based Assessment (1 Group)

Positive Aspects of Idea	Negatives, Cautions About Idea	Data, Information Needs to Implement Idea
<ul style="list-style-type: none"> • Learning reinforcement • Foundation building • Self-confidence building • Outcomes measures 	<ul style="list-style-type: none"> • Could decrease student motivation for higher achievement • Need to ensure goals/objectives parallel those of the institution as well as the accrediting standards 	<ul style="list-style-type: none"> • Performance on external measures of competence • Performance on comprehensive internal measure of competence • Correlation to accrediting standards

Idea #9: Identifying Competencies for M.D. (1 Group)		
Positive Aspects of Idea	Negatives, Cautions About Idea	Data, Information Needs to Implement Idea
<ul style="list-style-type: none"> • Advanced placement • Better education • Forces us to identify what's important • Focused educational program 	<ul style="list-style-type: none"> • May require more resources • Question: decrease alumni giving / decrease socialization • Make ourselves obsolete • Some competencies may not be definable 	<ul style="list-style-type: none"> • Other schools doing this • Non-medical programs (e.g. engineering, law) • Individual programs within medical schools • Physicians in practice

Idea #10: Value Cultural Diversity in Institution (1 Group)		
Positive Aspects of Idea	Negatives, Cautions About Idea	Data, Information Needs to Implement Idea
<ul style="list-style-type: none"> • Draws everyone in • Health of public will be improved • Benefit to faculty and students • Increase utilization of resources • Broadens effectiveness as move into other areas (durable and transferable) 	<ul style="list-style-type: none"> • Time and money • Energy • Pooh-pooh effect • Lack of revenue stream • Discomfort of staff during transition • Never ending work to be done in this area 	<ul style="list-style-type: none"> • Survey community/students/faculty • Best practices analysis – including other industries • Before and after exercises • Do a value assessment

Appendix H Forum Faculty

Paul E. Plsek is an internationally recognized consultant on improvement and innovation for today's complex organizations and the developer of the concept of DirectedCreativity™.

An engineer by background, he has 20 years' experience in the field of quality management. Formerly an engineering manager at AT&T's Bell Laboratories Quality Assurance Center—the leader among industrial corporations in research in the field of quality management—and the corporate quality planning director for AT&T, guiding the development of competitive quality management systems within the company after the breakup of the Bell System. Paul has been a private consultant since 1985; his clients include AT&T, Blue Cross, Eli Lilly, Hewlett Packard, Shell (England), Mars, Upjohn, Green Mountain Power, Kaiser-Permanente, The Mayo Clinic, Schering-Plough, the Brigham and Women's Hospital in Boston, the Centers for Disease Control, and many others.

Paul has written numerous articles, presented papers at a variety of conferences, and led seminars for more than 10,000 managers and executives in a variety of companies around the world. He was a co-author of the Juran Institute's popular training book, *Quality Improvement Tools*.

Well known and highly regarded for his experience in bringing modern quality management techniques to health care organizations, Paul has collaborated in the UK with the National Health Service to develop a set of simple rules to guide the design of better systems of care for the elderly and served as co-editor of the journal *Quality Management in Health Care*. He was actively involved in the pioneering National Demonstration Project (NDP) on Quality Improvement in Health Care, the first large-scale effort to apply industrial quality concepts in health care, and contributed an invited chapter summarizing the use of quality improvement tools for the book *Curing Health Care*, by Drs. Berwick, Godfrey and Roessner (Jossey-Bass, 1990). Paul is a Senior Fellow at the Institute for Healthcare Improvement, the organization that grew out of the NDP, where he contributes to special projects. His current research work includes research projects with the Harvard School of Public Health and the Vermont-Oxford Neonatal Network. He is an advisor on complex systems design to the Institute of Medicine's Committee on the Design of the 21st Century Healthcare System.

While Paul's background as an engineer makes him a naturally analytical person, he has developed a keen interest in the topic of creative thinking. Through literature search, discussions with prominent researchers in the field, and direct practical experience with clients, he developed the concept of Directed Creativity. His seminars have shown a variety of people that there is a serious approach to creative thinking. Creative thinking is a natural process that anyone can participate in, if they just know how. His book on the topic, *Creativity, Innovation, and Quality*, is available from Quality Press.

The *DirectedCreativity* Website can be seen at <http://www.DirectedCreativity.com/>

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