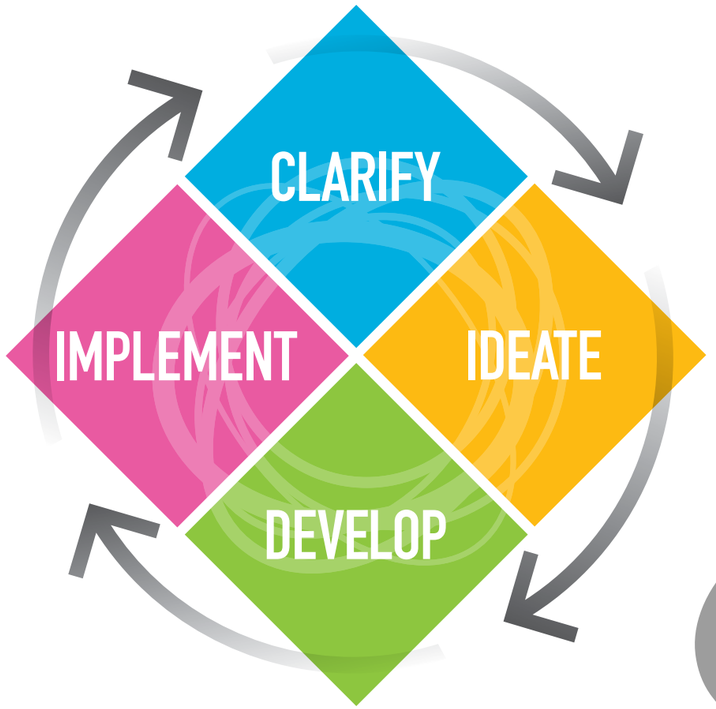
CPS Model

In the most recent iteration of the CPS Model, there are four stages with six explicit steps. Within each stage, each step uses divergent and convergent thinking.



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CPS Model based on work of G.J. Puccio, M. Mance, M.C. Murdock, B. Miller, J. Vehar, R. Firestien, S. Thurber, & D. Nielsen (2011).

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Creative Education Foundation™

Educating for Creativity Level 1 Resource Guide

"We can all create a desired future instead of merely accepting what life offers." — Sidney Parnes

"Imagination is more important than knowledge. For while knowledge defines all we currently know and understand, imagination points to all we might yet discover and create." — ALBERT EINSTEIN

"The one thing that can solve most of our problems is dancing." — JAMES BROWN

Welcome to Educating for Creativity - Level 1

In May 2010, the lead article in *Newsweek* was entitled: "The Creativity Crisis." The article states, "For the first time, research shows that American Creativity is declining. What went wrong and how we can fix it?" Authors attribute much of the decline over the last 20 years to education – specifically test taking and teaching to one answer.

To compound this issue, one month earlier, *Fast Company* magazine reported interviews with CEO's of Fortune 500 companies in a study sponsored by IBM. They said the most important leadership quality for CEOs is creativity.

We're left with a problem on our hands. One, which we believe we can solve creatively. This class is your fast track to a deliberate creativity process that will transform your classroom. You'll learn the Creative Problem Solving (CPS) process, based on the proven Osborn-Parnes CPS model, along with recent brain research on how to accelerate learning. Your facilitators will guide you through structured activities, real-life applications, and give you thorough, hands-on working knowledge of the CPS model, as it relates to the classroom.

We look forward to a fun-filled, thought-provoking time together!

—Your EFC Facilitators

Acknowledgements

The Creative Education Foundation (CEF) is deeply grateful to those whose efforts made this guide possible. In particular, we acknowledge the groundbreaking work of Alex Osborn, Sidney Parnes, PhD; and Ruth Noller, PhD. Alex Osborn helped us learn that it is "easier to tone down a wild idea than it is to think up a new one." He also crafted creative thinking techniques that are now used worldwide. Osborn founded CEF in 1954 and launched the Creative Problem Solving Institute (CPSI). Parnes joined him the next year and became a guiding force for both CEF and CPSI.

Parnes partnered with Osborn beginning in the 1950s to develop methods for teaching creative thinking and problem-solving. After founding the Creative Problem Solving Institute, CEF sponsored, with Parnes and Noller teaching, the nation's first creative studies graduate courses at SUNY Buffalo State. Parnes' work focused on helping people learn and practice deliberate creativity in their personal and professional lives as well as in academic settings.

CEF also thanks its dedicated volunteers who continue to refine the materials used to teach Creative Problem Solving as the craft evolves. This version of the CEF Resource Guide was developed by the CEF Training & Materials Committee and CEF staff: Beth Barclay, Dan Bigonesse, Stephen Brand, PhD; Clare Dus, Gert Garman, Sunil Gupta, PhD; Karen Lynch, Dimis Michaelides, MBA, MA; Suzie Nussel, Kristen Peterson, MS; Elizabeth Power, MEd; Rosemary Rein, PhD; Beth Slazac, MS. Previous versions were developed through the efforts of a number of people including Tony Billoni, Cyndi Burnett, EdD; Suzanne Chamberlain, Jeanne Chatigney, Roger Firestien, PhD; Diane Foucar-Szocki, EdD; John Frederick, Paul Groncki, PhD; Bill Hartwell, Chris Heinz, Tim Hurson, Hedria Lunken, Siri Lynn, Blair Miller, MS; Cheryl Nee-Gieringer, MA; Russ Schoen, MS; Bill Shephard, Sarah Thurber, MS; and Jonathan Vehar, MS.

Special thanks to the International Center for Studies in Creativity at SUNY Buffalo State College, FourSight LLC, Blair Miller, Gerard Puccio, PhD; and Sarah Thurber for their contributions to the field and specifically for their help with permissions, production, and process.

Finally, appreciation to the generosity and thought leadership of the CEF and CPSI community in sharing best practices and evolving work in creative studies.

Why Creative Problem Solving (CPS)?

Mastery of Creative Problem Solving as a practice equips you to:

- Create an environment in which creativity and innovation thrive
- Use a broad set of tools and methods to foster key behaviors conducive to creative thinking
- Engage personal, organizational, and social benefits of CPS
- Use tools for divergent and convergent thinking
- Practice specific CPS methods in the service of personal, organizational, and social challenges
- Practice deliberate creativity as an integral part of work and life
- Apply core principles of the Creative Problem Solving process in multiple settings.

Table of Contents

Setting the Stage

Creativity: What is your definition of creativity? How inclusive is it? Where are the boundaries around it?

Some definitions of creativity:

- **"Novelty that is useful."** First referenced in 1724 in the text, *The Irish Historical Library,* and later stated by Stan Gryshiewicz, PhD, Center for Creative Leadership.
- "**Creativity is the production of novel and useful ideas in any domain."** Professor Teresa M. Amabile, PhD, Harvard Business School.
- **"Creativity is the process of bringing something new into being."** Psychologist Rollo May, PhD.

Being aware of your own definition is helpful, since it impacts your approach to the process. Because creativity is subjective, there is no "wrong" definition.

CEF uses a shared understanding that has common characteristics. Creativity is thinking that:

- Is imaginative
- Includes the new and novel
- Focuses on the process
- May be deliberate

As you learn CPS, you'll use specific tools and methods to foster deliberate creativity, problem solving, and innovation. Through the process, you'll (re)discover and unleash your creativity.

Barriers and Bridges to Creativity

Saying that creativity may be "deliberate" means that it is intentional — something done with thought and the application of specific processes. The more the tools and skills associated with creative thinking and Creative Problem Solving are used, the more ingrained the habit of creative thinking becomes and the easier it is to utilize in many contexts.

Of course, there are both barriers and bridges to the practice of deliberate creativity.

BARRIERS

As with any practice of effort, some barriers are quite common. When people feel they are being judged negatively for their efforts, these barriers can also become self-protective statements:

- "We don't have time!"
- "It takes too many resources."
- "I'm just not the creative type."
- "In this culture? You've got to be kidding."
- "Not me! I'm not hanging myself out to dry like that."
- "I don't have a creative bone in my body. Not my skill-set."
- "Don't we have an art department that does that?"
- "I don't want to look stupid."
- "We tried that before. It won't work."

Notice that all of these focus on time, resources, culture, internal and external judgment, and perceptions of talent or skill. Whether these are external statements or internal self-talk, they have a dramatic impact: they help others believe that they aren't, can't be, or shouldn't be creative — and that simply isn't the case. So, remember that everyone has tremendous creative potential that can be unlocked and harnessed. The challenge is to identify the factors that affect awareness and use of creativity. Once an individual knows those, it's easier to make productive choices about how to use, improve, and refine skills that support creativity.

"Learn the craft of knowing how to open your heart and to turn on your creativity. There's a light inside of you." — JUDITH JAMISON

BRIDGES

Along with the barriers that inhibit the ability to express creativity, there are also bridges. These key elements support deliberate creativity and creative thinking. They include the choice to:

- Shift from ***"Yes, but"*** to ***"Yes, and"*** thinking.
- Foster a ***"What if?"*** outlook (remaining curious).
- Suspend or defer judgments to maintain openness to new ideas.
- Recognize that every experience informs creativity.
- Embrace incubation and letting the brain work "out of awareness" on ideas.
- Develop a climate for creativity; changing the physical environment or mental/emotional outlook to be open to new ideas.
- Use Creative Problem Solving tools to hone practice.
- Work ideas instead of using them (allowing them to change and develop).
- Balance the use of imagination, knowledge, and evaluation.
- Develop an internal observing "wise self."

What is Creative Problem Solving?

CPS is a proven method for approaching a problem or a challenge in an imaginative and innovative way.

It helps people re-define the problems and opportunities they face, come up with new, innovative responses and solutions, and then take action. The tools and techniques used make the process fun, engaging, and collaborative. CPS not only helps create better solutions, it creates a positive experience that helps speed the adoption of new ideas.

Noted CPS educator and practitioner, Ruth Noller, PhD, described CPS as the sum of its parts:

Creative specifies elements of newness, innovation, and novelty.

Problem refers to any situation that presents a challenge, offers an opportunity, or represents a troubling concern.

Solving means devising ways to answer, to meet, or to satisfy a situation by changing self or situation.

Ruth Noller also created a symbolic equation for Creative Problem Solving[1]:

$$C = fa(K, I, E)$$

Creativity is the Function of combining Knowledge, Imagination, and Evaluation, all of which are tempered by "attitude."

Fostering a positive belief that each person is creative is the key to engaging knowledge, imagination, and evaluation.

"Creative Problem Solving" generates variations on the method can be traced back to the work of Alex Osborn in the 1940s, developed with Sid Parnes in the 1950s, and nurtured at SUNY Buffalo State and the Creative Education Foundation. Osborn noted in his breakthrough book, *Applied Imagination*, that Hindu teachers had been using brainstorming for over 400 years and Walt Disney[2] encouraged it among his artists in the 1920s (later called "dreaming as a team"). Osborn formalized the tool in the 40s. The Creative Education Foundation focuses on an evolution of Osborn-Parnes' CPS model, called the CPS Model.

Core Principles of Creative Problem Solving

CPS begins with two assumptions:

Everyone is creative.
Creative skills can be learned and enhanced.

The core principles are:

Divergent and convergent thinking must be balanced. Keys to creativity are learning ways to identify and balance expanding and contracting thinking (done separately) and knowing when to practice them.

Ask problems as questions. Solutions are more readily invited and developed when challenges and problems are restated as open-ended questions with multiple possibilities. Such questions generate lots of rich information, while closed-ended questions tend to elicit confirmation or denial. Statements tend to generate limited or no response at all.

Defer or suspend judgment. As Osborn learned in his early work on brainstorming, the instantaneous judgment in response to an idea shuts down idea generation. There is an appropriate and necessary time to apply judgment when converging.

Focus on "Yes, and ..." rather than "No, but." When generating information and ideas, language matters. "Yes, and" allows continuation and expansion, which is necessary in certain stages of CPS. The use of the word "but"—whether preceded by "yes" or "no"— closes down conversation, negating everything that has come before it.

"It is easier to tame a wild idea than it is to push a closer-in idea further out." — ALEX OSBORN

Divergent and Convergent Thinking: The Dynamic Balance of Creativity

In *Applied Imagination,* Alex Osborn noted two distinct kinds of thinking that are essential to being creative:

Divergent Thinking: Generating lots of ideas and options
Convergent Thinking: Evaluating ideas and options, and making decisions

People engage in both kinds of thinking on a daily basis. The secret to creating new ideas, however, is to **separate divergent thinking from convergent thinking**. This means generating lots and lots of options before evaluating them.

DIVERGENT THINKING GUIDELINES

Both Osborn and Parnes note the importance of removing the barriers to **divergent thinking** in their book *Visionizing*. They suggest that criticism is taboo, free-wheeling is desirable, quantity breeds quality, and combinations and improvement are sought.

These suggestions have been condensed into guidelines for divergent thinking:

Defer Judgment – Deferring judgment isn't the same as having no judgment. It just says, "hold off for a while." Avoid judging ideas as either bad or good in the divergent-thinking phase.

Deferring judgment is a key component to any successful problem-solving session. Without it, generating novel solutions becomes almost impossible.

Combine and Build – Use one idea as a springboard for another. Build, combine, and improve ideas.

Seek Wild Ideas – Stretch to create wild ideas. While these may not work directly, getting way outside the box allows the space needed to discover extraordinary ideas.

Go for Quantity – Take the time necessary and use the tools in this guide to generate a long list of potential options.

To make it easier to generate a long list, set a concrete goal such as at least 50 ideas in 7 minutes for groups or 30 ideas in 7 minutes if solo before going to the next step. This sharpens focus and prompts the changes the brain needs to get moving. It also supports "deferring judgment."

Divergent Thinking Guidelines

- Defer Judgment
- Combine and Build
- Seek Wild Ideas
- Go for Quantity

In the 1970s, Sid Parnes and Ruth Noller conducted a ground-breaking research study called the **Creative Studies Project**[3]. This research demonstrated that students trained in divergent thinking techniques were able to produce twice as many quality ideas as those who did not have creativity training.

"The best way to have good ideas is to have lots of ideas.. and then throw the bad ones away." — LINUS PAULING

CONVERGENT THINKING GUIDELINES

At certain points in the process, thinking and focus need to shift.

To select the best of the divergent options, determine their potential value. In the **convergent thinking** process, choice is deliberate and conscious. Criteria are purposefully applied to screen, select, evaluate, and refine the options, all the while knowing that raw ideas still need development.

Scott Isaksen, PhD and Don Treffinger, PhD proposed convergent thinking guidelines in *Creative Problem Solving, the Basic Course* (1982).

Use the guidelines that follow when it's time to make decisions about the ideas generated by divergent thinking.

Be Deliberate – Allow decision-making the time and respect it requires. Avoid snap decisions or harsh judgments. Give every option a fair chance.

Check Your Objectives – Verify choices against objectives in each step. This is a reality check – are the choices on track?

Improve Your Ideas – Not all ideas are workable solutions. Even promising ideas must be honed and strengthened. Take the time to improve ideas.

Be Affirmative – Even in convergence, it's important to first consider what's good about an idea and judge for the purpose of improving, rather than eliminating, ideas.

Consider Novelty – Do not dismiss novel or original ideas. Consider ways to tailor, rework, or tame.

Convergent Thinking Guidelines

- Be Deliberate
- Check Your Objectives
- Improve Your Ideas
- Be Affirmative
- Consider Novelty

Roles in Group Facilitation and Ownership

Effective brainstorming comes by setting up distinct roles. In *Applied Imagination*, Alex Osborn was the first to address the role and responsibility of the facilitator (or leader of the "brainstorming panel"). Later, the roles of client and resource group were identified by Treffinger, Isaksen, and Firestien in *Creative Problem Solving: The Basic Course*.

THREE KEY ROLES: THE CLIENT, THE FACILITATOR & THE RESOURCE GROUP

The Client:

- Owns the "problem" and defines the challenge to be worked on
- Is the key decision-maker or implementer
- Selects the group to work on the challenge
- Provides direction throughout session
- Is responsible for or approves all convergence

The Facilitator:

- Is responsible for managing the CPS process
- Manages logistics, idea flow, and group development
- Makes sure the client gets what he/she needs from the group
- Meets with the client before gathering the resource group and afterward to debrief and apply back learnings from the session

The Resource Group:

- Serves the needs of the client
- Provides energy, ideas, insights, and diverse points of view during all divergent phases
- Adds new perspectives, especially if they represent members not directly involved with the situation

CPS Process & Model

EVOLUTION OF CPS

Creative Problem Solving has changed and evolved over the past 60 years. Many organizations and individuals have contributed to this evolution. Through continuous research, development, and training related to CPS, the International Center for Studies in Creativity at SUNY Buffalo State has been, and continues to be, a primary contributor to this evolution. The changes that have taken place relate to the steps in the model and the language used to describe them.

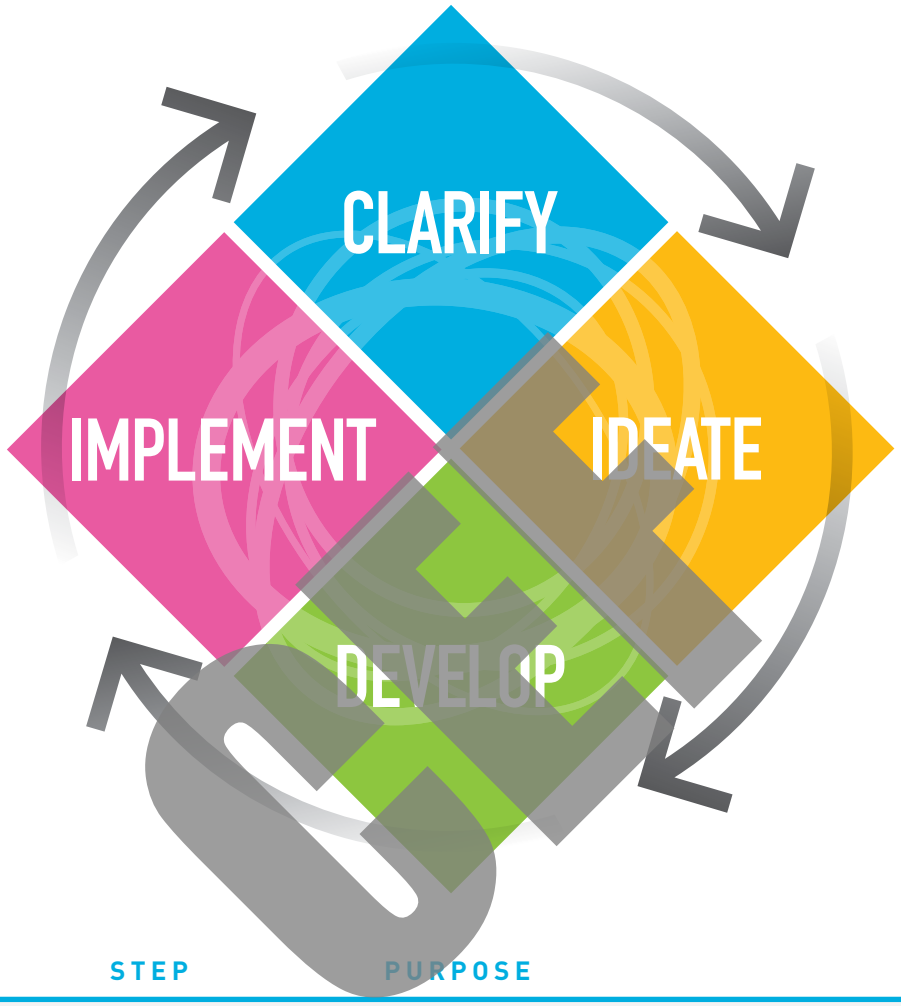
Over time many divergent and convergent tools have been developed, which greatly enhance innovation and design thinking. During all CEF training, tools are presented at the appropriate steps but may also be used at other times.

THE STAGES IN CPS MIRROR THE WAY PEOPLE NATURALLY SOLVE PROBLEMS

At the same time that CPS is a structured process, it's also a flexible one. CPS is cyclical, and as users move from step to step, it becomes possible to jump back and forth between the four stages. When CPS becomes a regular and frequently used way of thinking and working, each step can be used as needed, when needed. Mastery of the fundamentals of CPS enables adapting the process to every situation encountered.

CPS Model

In the most recent iteration of the CPS Model, there are four stages with six explicit steps. Within each stage, each step uses divergent and convergent thinking.



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Clarify – Explore the Vision

Purpose

Identify the goal, wish, or challenge.

Diverge

- Generate goal or wish statements.
- Ask participants in ways that allow narrative (use an invitational language stem): **"I wish..."** and **"It would be great if...."**

Sample Diverging Questions

- What are goals you'd like to accomplish?
- What's been on your mind? Why?
- What do you wish worked better? What are the challenges?
- What would you like to do differently?
- What have you never done that you would like to do?
- Imagine yourself one year from today. What goals, dreams, or visions have you accomplished?
- If you had unlimited time, funds, and support, what would you accomplish?
- What is going on at home or in our communities that should change?

Tools for Diverging: Brainstorming, Brainwriting

Converge

Choose the goal/wish/challenge using the tool, **3 "I"s**:

1. Is it **Important**?
2. Do you have **Influence**?
3. Do you need new **Ideas**?

Tools for Converging: Dot Voting, Highlighting (Hits, Cluster, Restate)

Outcome

Statement of key goal, wish, or challenge to address.

Clarify – Gather Data

Purpose

Describe and generate data to enable a clear understanding of the challenge.

Diverge

- Generate as much data/facts/feelings as possible.
- Ask questions: **Who, What, When, Where, Why, How?**

Sample Diverging Questions

- Ask yourself, "What do I know about this challenge?"
- What is a brief history of the situation?
- What is the origin of this challenge? When did it become a challenge?
- How does this challenge make you feel?
- Who else is involved? What is their role? Who are the key decision-makers?
- Why is this a challenge?
- What is your influence over the situation?
- What are the different components of the challenge?
- What have you already tried?
- What does your gut tell you? What is your ideal outcome?
- What are the success criteria?

Tools for Diverging: Brainstorming, Brainwriting, 5 "W"s & an H

Converge

- Review and select the most important data that best helps you understand your challenge statement.
- Take all the data that you have checked and group it into clusters with the same theme. You can make as many clusters as necessary.
- Take a moment and use one or two words to restate or label each cluster.

Tools for Converging: Dot Voting, Highlighting (Hits, Cluster, Restate)

Outcome

Significant data, information, and success criteria to enable a clear understanding of the challenge.

Clarify– Formulate the Challenge

Purpose

Sharpen awareness of the challenge and create challenge questions that invite solutions.

Diverge

- Generate a long list of challenge statements phrased as questions. Look at your challenge from as many directions as you can imagine.
- Use the invitational language stems with: **"How to ..." (H2), "How might I ..." (HMI), and "In what ways might we ..." (IWWMW).**

Sample Diverging Questions

- Rephrase challenge statement from **Explore the Vision** as a **HMI** question.
- Rephrase key data as questions.
- Rephrase barriers to success as questions.
- Phrase questions from other perspectives: stakeholders, a child, a mentor, or a famous person.

Tools for Diverging: Brainstorming, Write Data as Questions, Word Dance, Ladder of Abstraction

Converge

- Select the challenge statement that addresses what really needs to be addressed or solved.
- Set aside questions that are really ideas and revisit them in the next step.
- Check to make sure the challenge statement is brief, focused, and beneficial.

Tools for Converging: Dot Voting, Highlighting (Hits, Cluster, Restate), 3 "I"s

Outcome

A refined challenge question (reframed problem) that invites solution and stimulates new thinking.

Ideate – Explore Ideas

Purpose

Generate ideas that answer the challenge questions.

Diverge

- Using short phrases or headlines, generate ideas to answer your challenge question.
- Stretch for as many ideas as possible, then generate more.

Sample Diverging Questions

- What ideas immediately come to mind to answer your challenge question?
- What are all the ideas you can imagine for solving this?
- What ideas would key stakeholders have?
- Imagine you are (a child, the CEO, a movie star, etc.). What ideas do you have?
- What are the worst ideas, the ones that will get you fired? Now reverse them.
- SCAMPER: What can you Substitute, Combine, Adapt, Modify, Put to other uses, Eliminate, or Rearrange?

Tools for Diverging: Brainstorming, Excursions, Forced Connections, SCAMPER

Converge

- Generate a long list of ideas; mark them as "workable," "innovative," and "may solve the challenge."
- Stretch for novelty at this point.
- Keep some of the wild and unusual ideas in the mix.
- Group the ideas you have chosen into thematic clusters representing paths to solving the challenge. When you are done, give each cluster a 1-2 word name that captures its essence.
- Choose the cluster(s) that appears to be the best path to take. Restate it as an idea, adding the starter phrase, **"What I see myself doing is ..."** to the beginning of the cluster title.
- If more than one cluster is appealing, you can use the criteria generated in the next stage (Develop) to choose the strongest solution.

Tools for Converging: Dot Voting, Highlighting (Hits, Cluster, Restate)

Outcome

List of ideas or alternative actions that may solve the challenge.
"What I see myself doing is ...."

Develop – Formulate Solutions

Purpose

Move from ideas to solutions. Evaluate, strengthen, and select solutions for best "fit."

Diverge

- Generate a list of options to strengthen the idea(s) and categorize them by level of potential.

Sample Divergent Questions

- What do you like about the solution? What are its advantages or positive points?
- What would become possible in the future if this came to pass?
- What are the spin-offs or possible future gains? (Use the statement starter, **"It might ..."**)
- What are possible limitations? (Be sure to pose these as questions: **"How to ...," "How might I ...,"** and **"In what ways might we ..."**)
- Generate ways to overcome concerns one at a time, in order of their importance.

Tools for Diverging: Brainstorming or PPCO (Pluses, Potentials, Concerns, ways to Overcome concerns)

Converge

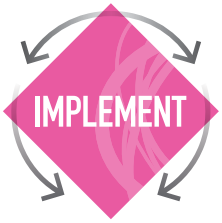
- If you have multiple solutions, use an Evaluation Matrix to help select and further refine.
- Revisit the success criteria from the second step, Clarify – Gather Data. Clarify to be as specific as possible. **For example:** *"Will it be operational in three months?"* is more specific than *"Will it be ready soon?"*
- Review your solution statement along with your lists from PPCO.
- Select the most important options to incorporate and create a more robust solution that starts with, **"NOW what I see myself doing is ...."**

Tools for Converging: Dot Voting, Evaluation Matrix

Outcome

Solution to be implemented. Restate (**"NOW what we see ourselves doing is ..."**).

Implement – Formulate a Plan



Purpose

Explore acceptance and identify resources and actions that will support implementation of the selected solution(s).

Diverge

- Generate a list of "assisters" who can help make your solution a reality. Include ways to enlist their help.
- Generate a list of "resisters" and ways to overcome their resistance.
- Generate a long list of short statements of all the actions needed to make your solution a reality.

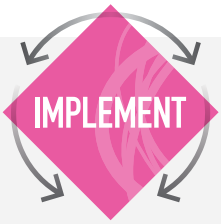
Sample Diverging Questions

- Who might assist you with your solution?
- What resources are available (people, materials, money)?
- How can you gain acceptance for this solution?
- How can you build enthusiasm?
- Who might resist or need to be convinced?
- What are some things you might need to work to overcome?
- What are some contingencies you might develop for your solution?
- What steps might you take to put your solution into action?
- Where might you start?
- What short-term actions do you need to take? What mid-term actions do you need to take? What long-term actions do you need to take?
- How can you maintain enthusiasm for this solution?
- What can you do in the next 24 hours?

Tools for Diverging: Brainstorming, Brainwriting, Assisters/Resisters

"If you can dream it, you can do it." — WALT DISNEY

Converge



- Review your list and select all actions needed to ensure success.
- Create a plan: What to do? Who will do it? By when will it be done? Who will check or who needs to know when it's done?
- Arrange your actions according to when they need to be completed, from soonest to latest.
- Assign each action to a person, affix specific dates, and make sure someone is checking to ensure that all actions are getting done.
- Assign at least one "jump start" action that can be completed in the next few hours and then the next 24 hours.

Tools for Converging: Dot Voting, Highlighting (Hits, Cluster, Restate), Action Plan

Outcome

Use the tool **Action Plan**. List resources and action steps needed to sell or implement selected solution. Sort the action steps by short-, mid-, and long-term and specify what, who, by when, and who checks the step.

	What?	Who?	By When?	Who Checks?
Short-term				
Mid-term				
Long-term				

"Problems are only opportunities in work clothes." — HENRY J. KAISER

Why Creativity in Education; Why Now?

PROVOKING THOUGHT, ACTIVITIES AND DISCUSSION

"Many schools have fallen into a pattern of giving kids exercises and drills that result in their getting answers on tests that look like understanding. Most students, from as young as those in kindergarten to students in some of the finest colleges in America do not understand what they've studied, in the most basic sense of the term. They lack the capacity to take knowledge learned in one setting and apply it appropriately in a different setting. Study after study has found that, by and large, even the best students in the best schools can't do that." — *Howard Gardner, Harvard Psychologist and author*

"NCLB (No Child Left Behind) has been a costly disaster. None of its prescribed remedies has been successful as a template for turning around a low-performing school. No school was ever improved by closing it. Few schools see results if they are handed over to the state or private management, and thus far, restructuring has demonstrated little or no success. Low-performing schools can improve, and there are many examples of such improvement, but there is no model that Washington can prescribe or dictate to make it happen. When low-performing schools improve, it is almost always the work of an inspiring principal and a dedicated staff, whose efforts are enhanced by professional development, a strengthened curriculum, greater access to resources, better supervision, reduced class size, extra instructional time, and other commonsense changes.

NCLB's legacy is this: State accountability systems that produce inflated results; widespread cheating to meet the annual targets; a curriculum with less time for history, science, and the arts; teaching to the test; and meager academic gains on the National Assessment of Educational Progress. This too is the legacy of NCLB: a widespread public perception that the public schools have "failed," because they are unable to meet the law's demand for 100 percent proficiency. This perception of failure erodes public confidence in public education and sets the stage for privatization.

Instead of admitting that NCLB has been an expensive and demoralizing failure, President Obama and Secretary Duncan have accepted its fundamental premise that students must be tested annually and that schools and teachers must be subject to harsh punishment if they are unable to raise test scores. Their Race to the Top (RTTT) program will make student test scores even more consequential than they were under NCLB." — *Diane Ravitch, Michigan Education Association, from essay, "The State of Education Today."*

What We Teach: Critical Components of Creativity in Children

Components	Description
Imagination & Originality: **Imagine and explore original ideas**	Creativity involves producing original ideas that are unusual or novel, and it sometimes involves combining two or more different concepts to create a new, synthesized idea. Children express their imagination and original ideas through pretend play and the creation of imaginary companions to make-believe words.
Flexibility: **Maintain openness to unique and novel experiences**	The interaction of intelligence and creativity often begins with the flexible combination and modification of prior concepts or strategies to produce new representations. Children can experience flexibility by seeing from different perspectives, remaining open to new and challenging experiences, or (especially as they become older) gaining awareness of how only seeing from a single perspective can limit their creativity.
Decision Making: **Make thoughtful choices that support creative efforts**	Discretion, judgment, and decision making play an important role in the development and expression of creativity for children. Decision-making skills require convergent thinking, which is critical to creativity because it allows individuals to refine ideas and to select the best possible answer from the ideas generated to solve a problem.
Communication & Self-Expression: **Communicate ideas and true self with confidence**	Communicating one's unique perspective plays a vital role in creativity by allowing individuals to express their feelings, ideas, and desires through language, art and physical movement. A sense of confidence and connection to authentic feelings allows children to express their unique insights and thoughts with others.
Motivation: **Demonstrate internal motivation to achieve a meaningful goal**	Motivation is at the core of the developmental experience and inspires children to explore and satisfy curiosity. When individuals are internally motivated, acting without the promise of reward, they are more motivated.
Collaboration: **Develop social skills that foster creative teamwork**	Collaboration allows for the exchange of ideas among children as they work to find a solution for a problem or project. Working together towards a shared goal fosters perspective-taking and provides a chance for children to explain and expand their thinking in new ways.
Action & Movement: **Boost creative potential through physical activity**	Exercise and physical activity are associated with better focus, enhanced memory, and greater ability to learn. Action and movement stimulate the building blocks of learning in the brain, and regular exercise can act as a cognitive enhancer to promote creativity.

Permission Pending – Center for Childhood Creativity: Executive Summary, Inspiring a Generation to Create: Critical Components of Creativity in Children

How We Teach: Educating for Creativity

GUIDING PRINCIPLES AND PRACTICES

The heart of the CEF Education Program is the Osborn Parnes Model of Creative Problem Solving (CPS) that utilizes creative and critical thinking and applied imagination to address challenges. In addition to learning and applying CPS, young people participating in the process develop and apply the skills to be positive leaders and effective communicators.

The following CEF Education Principles and Practices are the foundation for teaching young people these skills so that they can make a positive difference in their own lives and in the world. The Principles and Practices are based on current research and theories of teaching, learning and creativity development. The ten Guiding Principles are listed in bold type followed by the rationale for each principle. Specific practices that support the effective implementation of each principle are included below them.

While the ten Guiding Principles are related and interactive, they are organized according to a framework of:

- The Environment for Learning (1,2)
- The Needs and Perspective of Today's Learners (3,4)
- The Habits of Mind of Teachers/Facilitators (5,6,7,8,9,10)

THE ENVIRONMENT FOR LEARNING WILL:

1. ENSURE SAFETY:

Create a learning environment that is physically, emotionally and mentally safe.

- Encourage all ideas and provide for a variety of answers.
- Establish respectful ground rules and guidelines.
- Manage student behavior positively.
- Check learning space and equipment for safety.
- Consider potential safety hazards when selecting or designing instructional activities.
- Find out about any special physical or emotional needs of the learners.
- Communicate with parents/guardians.

2. BUILD ON A CONNECTED COMMUNITY:

Communities are complex and influence the learners' expectations and behavior. Understanding and incorporating this cultural/community context helps to make learning more relevant and meaningful.

- Understand and build upon the culture and experiences of the participants. Know that family structure, language, and the interpretation of language is different and must be respected.
- Understand cultural norms and consider how they might impact instructional choices.

LEARNERS WILL:

3. BUILD POSITIVE RELATIONSHIPS:

Building positive relationships with the instructor and among the learners enhance learning.

- Build teams.
- Behave responsibly and positively.
- Honor and respect self and others.

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4. BE ACTIVELY INVOLVED:

The participants are more engaged in learning if they are actively involved and can help to determine what is presented and the strategies used.

- Ask open questions.
- Encourage active participation and on-task behavior.
- Allow learners to help plan and deliver instruction.

TEACHERS/FACILITATORS WILL:

5. UNDERSTAND AND UTILIZE UNIQUENESS:

Each person has a unique way of learning and each person has a unique way of teaching. Building on these preferences and strengths enhances learning for all.

- Understand and build on learners' strengths and diversity.
- Help learners understand their own uniqueness and each other's preferences.
- Have teachers/leaders deliver content in various ways.

6. CONNECT WITH CONTENT:

Learners must understand what content will be covered and see its importance and relevance.

- Explore and build on prior knowledge.
- Help learners understand why content is important.
- Be explicit about content and expectations.

7. DEBRIEF AND APPLY:

Learning has meaning when it is debriefed and applied to other contexts.

- Debrief activities.
- Have learners reflect on what they have learned.
- Have students apply what they have learned.

8. KNOW THE BRAIN:

Instruction is based on current research and theory about the brain and new whole mind thinking.

- Utilize brain-based learning strategies.
- Understand current research about the physiology and anatomy of the brain.
- Incorporate current research about thinking in the conceptual age.

9. USE THE ETHICAL EYE:

All decisions, activities and materials must be considered from an ethical perspective.

- Use the CEF Values as a benchmark for program decisions.

10. STOP! LOOK! LISTEN!

Assessment and feedback inform our instruction.

- Measure the specific outcomes that are identified in the YW Program.
- Use a variety of assessments.
- Conduct an ongoing assessment throughout the learning experience. Constantly check for understanding.
- Modify instructional design and strategies based on the feedback from assessment

"Dare to visualize a world in which your most treasured dreams have become true." — RALPH MARSTON

Hints & Tips

HINTS & TIPS

Building a Creative Classroom

Provoking thought, activities, and discussion.

BUILD A COMMUNITY

- Create a team environment
- Make it safe – for ideas, for risk taking
- Work together to make rules and consequences

BUILD POSITIVE RELATIONSHIPS

- Making connections
- Expect respect
- Model the behaviors you want

BE ACTIVELY INVOLVED

- Listen well
- Communicate authentically
- Teach students to listen to each other

"Creativity is inventing, experimenting, growing, taking risks, breaking rules, making mistakes, and having fun." — MARY LOU COOK

HINTS & TIPS

Creativity Killers

Surveillance: Hovering over students

Evaluation: Making them worry about how others judge them

Rewards: Overuse of prizes which robs students of the pleasure of experiencing true creative activity

Competition: Putting students in win-lose, one-person-on-top activities

Over-Control: Telling students how to do everything instead of letting them problem solve

Restricting Choice: Telling students which activities to do instead of letting their curiosity lead the way

Pressure: Expectations that compare one student's growth unreasonable to another

Origin: Dr. Teresa Amabile, Psychologist.

HINTS & TIPS | Provoking Thought, Activities, and Discussion

- What do you think is going on?
- If you were there, what would you do?
- Why?
- How?
- How do you account for that?
- How do you feel about that?
- What might happen next?
- Who else had the same experience?
- What might you draw from that information?
- Does that remind you of anything?
- What association can you make?
- What might you have done differently?
- Were there any surprises?
- What did you observe?
- WHAT IF ...?

Origin: Adapted from: Beverly A. Gaw, "Processing Questions: An Aid to Completing the Learning Cycle." The 1979 Annual Handbook for Group Facilitators.

HINTS & TIPS | **Global Competencies**

These are Global Competencies taken from worldsavvy.org. It is interesting to note how many of these involve the capacity for creativity, innovation and problem solving.

Global competence is the disposition and capacity to understand and act on issues of global significance. Globally competent individuals possess and apply the following qualities, characteristics and abilities to lean about and engaging with the world.

Core Concepts:

- World events and global issues are complex and interdependent
- One's own culture and history is key to understanding one's relationship to others
- Multiple conditions fundamentally affect diverse global forces, events, conditions and issues
- The current world system is shaped by historical forces

Values and Attitudes:

- Openness to new opportunities, ideas and ways of thinking
- Desire to engage with others
- Self-awareness about identity and culture, and sensitivity and respect for differences
- Valuing multiple perspectives
- Comfort with ambiguity and unfamiliar situations
- Reflection on context and meaning of our lives in relationship to something bigger
- Question prevailing assumptions
- Adaptability and the ability to be cognitively nimble
- Empathy
- Humility

Skills:

- Investigates the world by framing questions, analyzing and synthesizing relevant evidence and drawing reasonable conclusions that lead to further inquiry
- Recognizes, articulates and applies an understanding of different perspectives, including his/her own
- Selects and applies appropriate tools and strategies to communicate and collaborate effectively

- Listens actively and engages in inclusive dialogue
- Is fluent in 21st century digital technology
- Demonstrates resilience in new situations
- Applies critical, comparative and creative thinking and problem solving

Behaviors:

- Seeks out and applies an understanding of different perspectives to problem solving and decision making
- Forms opinions based on exploration and evidence
- Commits to the process of continuous learning and reflection
- Adopts shared responsibility and take cooperative action
- Shares knowledge and encourages discourse
- Translates ideas, concerns and findings into appropriate and responsible individual or collaborative actions to improve conditions
- Approaches thinking and problem solving collaboratively

Source: WorldSavvy.org. Permission Pending.

"Everybody born comes from the Creator trailing wisps of glory. We come from the Creator with creativity. I think that each one of us is born with creativity. — MAYA ANGELOU

HINTS & TIPS | Technology and the Classroom

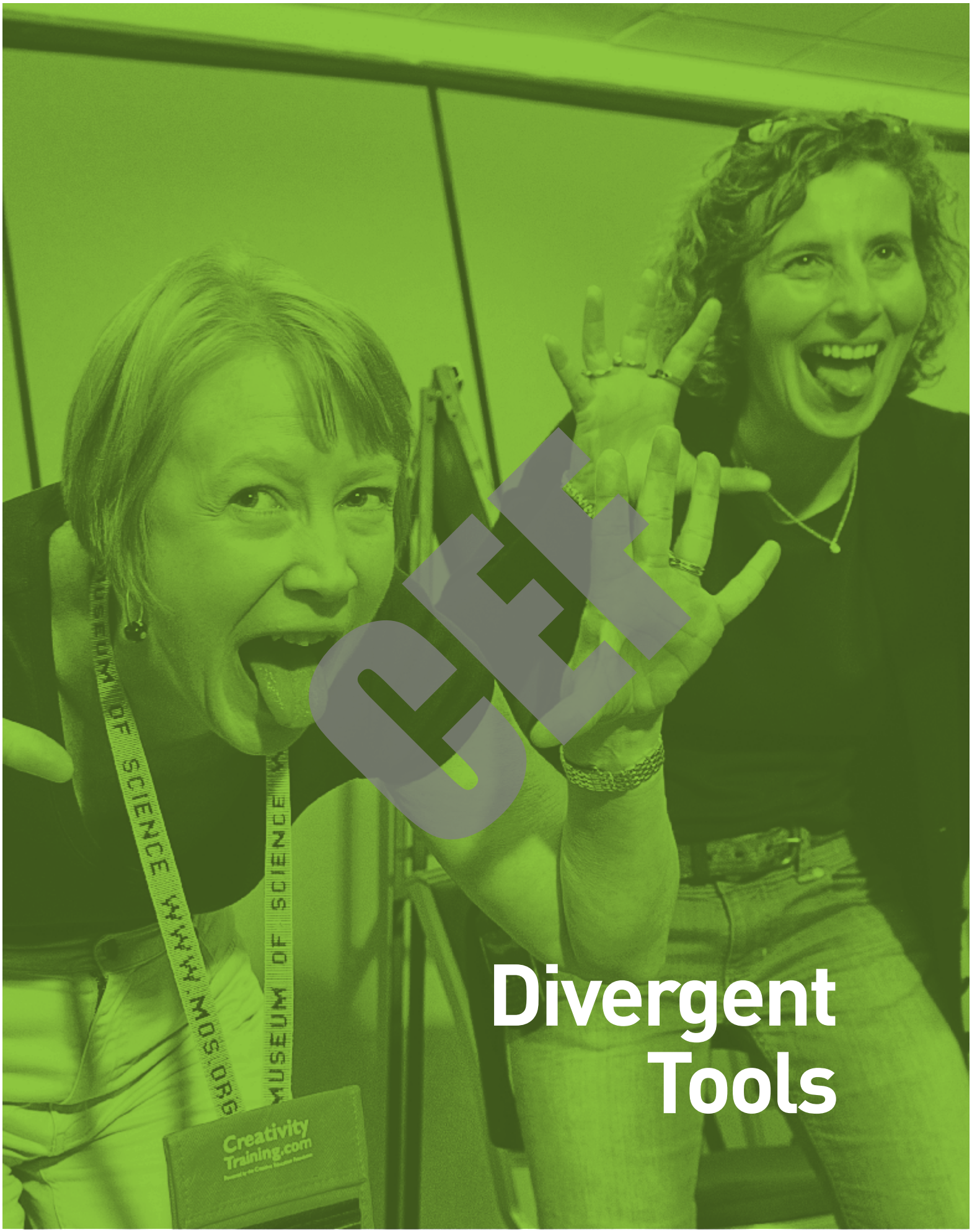
We must acknowledge that the way children access the world today is not the same as the way we use to access the world. Homes today no longer contain volumes 1-24 of Colliers Encyclopedia. Instead, children get all that information and more from one simple click of a mouse. Since technology is ubiquitous, it would seem almost cruel for a 21st century child to engage in a 19th century educational experience. In fact, the majority probably wouldn't engage at all and they certainly wouldn't learn the skill competencies, identified by various government and independent agencies, that would make them productive, creative, collaborative citizens of the future.

According to Richardson (2013), this "portends to be the messiest, most upheaval-filled 10 years in education that any of us has ever seen" (10) and one of the reasons is technological advances like we have never seen before. Like our children – technology is 'growing like weeds' and we as educators are expected to keep pace. However, a layering of technology onto traditional pedagogical practices and curriculum is not the appropriate approach to the issue of technology in the 21st Century classroom. While , educators are traversing a mindfield of pedagogical and technological threats, faith in student creativity can help us through this disruptive phase of educational innovation.

Instead of resisting technology or feeling overwhelmed by it, rely on your students to show you the newest tool in the kit. Design your classroom assignments in such a manner that you give your students autonomy to share the technology that reflects their interests, skill levels and creativity. Your experience in curriculum design will be "enhanced by your students' technological contributions while empowering them in the creative-educational process" (Boyko-Head, 2010).

Even Bloom got in on the technological wave.

"Technological change is not additive; it is ecological, which means, it changes everything." — NEIL POSTMAN



Divergent Tools

DIVERGENT TOOLS

Brainstorming

Benefits

- Offers versatility for working with groups (or alone), especially to solve problems
- Equalizes the room - allowing all group members to give input
- Promotes creative collaboration by groups

Instructions

1. Write down a statement of the challenge so it is visible to all.
2. Remind the group of the Divergent Thinking Guidelines.
3. Set a quota of ideas (options) and keep going until you meet it.
4. Gather and record concise and specific ideas.
5. Ideas should be stated in "headline" form and be recorded in written form so that all participants can see and read them. Record ideas as they are stated (do not edit!).
6. Periodically (every 15 ideas or so) check with the client or the group to make sure the ideas are going in the right direction.
7. Proceed until you have met your quota, or you have enough ideas to answer the challenge.

Use in: All steps of CPS when engaging divergent thinking

Origin: Brainstorming, as invented by Alex Osborn (*Applied Imagination*, 1953/1963), was defined as a "group's attempt to find a solution for a specific problem by amassing ideas."

DIVERGENT TOOLS

Brainwriting

Benefits

- Equalizes the contribution of the resource group and allows for more introverted people to communicate their thoughts/ideas
- Allows for time to reflect and incubate on ideas without the pace of the session feeling slow
- Provides opportunities for deliberate builds on others' thoughts/ideas
- Allows for a change of pace during a loud, raucous meeting (a silent process)

Instructions

1. Give each participant a Brainwriting form.
2. Have participants write the statement of the challenge at the top of the form.
3. Review the Divergent Thinking Guidelines.
4. Ask participants to think of three ideas and write them down, one in each box in the first row (complete only one row).
5. Have participants exchange their Brainwriting forms.
6. On the new form, ask participants to write three ideas, on the second row — either new ideas or a build on the ideas written in row one.
7. Swap forms again.
8. Continue to swap forms until all the forms are full.
9. Provide additional forms, if needed.

Note: As an option to exchanging forms, each participant puts their form in the center of the table when done, then selects one from center to write on next.

Use in: All steps of CPS when engaging divergent thinking

Origin: Geschka, H. (1980). *Methods and Organization of Idea Generation*. S. Gryskiewicz.

DIVERGENT TOOLS

Stick 'Em Up Brainstorming

Benefits

- Offers versatility for working with groups
- Equalizes the room - allowing all group members to give input
- Promotes creative collaboration by groups
- Increases speed and efficiency

Instructions

1. Start with the challenge or question being brainstormed.
2. Use 3"x 5" sticky notes and a dark, felt-tipped marker.
3. Write one idea per sticky note in headline form (2-5 words). Do not go into detail.
4. Write legibly! Others will need to read what you've written.
5. Call out your idea once you've written it or when you hand it in.
6. Keep an ear open for what others are calling out. If a build on someone else's idea occurs to you, write it down. If not, just move on with your own thinking.
7. Remember, the more ideas, the better!

Use in: All steps of CPS when engaging divergent thinking

Origin: Isaakson, A. & Dorval, K. et al. (1994/2000). *Creative Approaches to Problem Solving: A Framework for Change*. Kendall Hunt Pub. Co.

DIVERGENT TOOLS

Invitational Language Stems

Benefits

- Orients the brain to generate options
- Frames the situation by inviting solutions to explore options and ideas, rather than shutting down conversations with a traditional statement
- Uses stems that ask for open-ended information to start responses while generating or diverging when using the Creative Problem Solving process

  For example: *By starting the concern about cost with "How to ...," you naturally begin to generate ways to overcome the concern about cost:* "How to make it less expensive?" *or* "How to obtain funding from other sources?"

Use when you need to:

Explore the Vision	• It would be great if...(IWBGI) • I wish...(IW)
Formulate the Challenge	• How to...(H2) • How might...(HM) • In what ways might we...(IWWMW)
Explore Ideas	• Will it...(WI) • Does it...(DI) • What I see myself doing is...(WISMDI) • What I see us doing is...(WISUDI)
Formulate Solutions	• Now what I see myself doing is...(NWISMDI) • Now what I see us doing is...(NWISUDI)

Origin: Isaakson, A. Treffinger, D. (1985). *Creative Problem Solving: The Basic Course*. Buffalo, NY: Bearly Limited.

DIVERGENT TOOLS

5 "W"s and an "H"
(Who, What, Where,When, Why, and How)

Benefit

- Helps you gather data effectively

Instructions

Ask questions using each of the 5 "W"s and an "H":

1. Who?

- Who is involved? Who else? Who makes the decisions?
- Who benefits from the problem being solved? Who loses?

2. What?

- How can you summarize the problem? What has happened until now?
- How have you already tried to solve the problem?
- What has already worked? What hasn't worked?
- What do you think of the situation personally?
- What is your attitude toward the problem?
- What results would be satisfying?
- What has helped you so far? What obstacles have you encountered?

3. Where?

- Where does this happen? Where doesn't it happen?
- Where have you found help? Where have you encountered obstacles?

4. When?

- When did the problem arise?
- When does this problem happen?
- When do you want to take measures to solve this problem?
- Since when has the problem been a major concern?

5. Why?

- Why is this problem important to you?
- Why might it be an opportunity for you?
- Why did you get help? Why have others not helped?
- Why did you encounter obstacles?

Use to: Gather Data

Origin: This is credited to Hermagoras of Temnos, a 1st century BC Greek rhetorician. It is also credited to W. Edwards Deming and to Sakichi Toyoda of Toyota in association with the management of process and quality. How and sometimes How Much are generally credited to GM Saturn, Toyota, and the Kaizen process.

DIVERGENT TOOLS

Why, What's Stopping You?

Benefit

- Helps you develop additional challenge questions by getting to root cause and effect

Instructions

After generating a number of challenge questions or when production of challenge questions slows down:

1. Direct the challenge owner to look over the list and identify one challenge question of particular interest – one that seems to address his/her issue.

   Label the question as "A" and ask:

   - Why is this an important challenge to solve?
   - What would be the outcome if it were solved?

2. Turn each response into another "how to" question.

   For the newly resulting "how to" question, repeat the above questions, such that you are generating even more "how to's."

3. Continue this line of probing until response becomes too abstract and/or too far removed from the issue.
4. Return to the original challenge question ("A") and ask the challenge owner:

   - What's stopping you from doing/achieving that now?

5. Turn each response into another "how to" question.

   For the newly resulting "how to" question, repeat the above question, such that you are generating even more "how to's."

6. Continue line of probing until response is too far removed from the issue.
7. Return to the original list of questions and repeat for another question that the challenge owner identifies as interesting/meaningful.

Use to: Formulate the Challenge

Origin: The notion of extracting different levels of abstraction can be traced to the work of S.I. Hayakawa in 1978, which was based on the work of A. Korzybski in 1933. Further work done by:

Parnes, S. (1997). *Optimize the Magic of Your Mind.* Buffalo, NY: Bearly Limited.

Isaksen, S., Dorval, B., & Treffinger, D. (2000). *Creative Approaches to Problem Solving: A Framework for Change (2nd. Ed.).* Williamsville, NY: Creative Problem Solving Group-Buffalo.

Basadur, M. (1995). *The Power of Innovation.* London, Great Britain: Pitman Publishing.

EXAMPLE

A sense of accomplishment builds my business confidence **->**
How to build my business confidence?

Why is it important?

Being more productive will help me feel a sense of accomplishment each day **->**
How to feel a sense of accomplishment each day?

Why is it important?

Because I will be more productive in an organized office **->**
How to be more productive in my home office?

Why is it important?

A. How to better organize my office?

What's stopping you?

Because I don't have an organizational system in place **->**
How to find an organizational system for my home office?

What's stopping you?

I don't have time to research the best system **->**
How to carve out time to research home office systems?

What's stopping you?

I'm completely over-extended with my current project load **->**
How to build more time into my schedule?

DIVERGENT TOOLS

Word Dance

Benefits

- Generates more challenge questions and stronger challenge questions
- Reveals assumptions and generates alternative views

Instructions

1. Rewrite the challenge question at the top of a sheet of paper.
2. Circle the verb or action in the question.
3. Write that word below, then generate a list of alternates.
4. Circle the object or outcome in the question.
5. Write that word below, then generate a list of alternates.
6. Mix and match to make new challenge questions with the verbs and objects to create a better version of the challenge question that invites even more ideas.

Example

Challenge Question: How might I open a restaurant?

Open: launch, revive, begin, start, embark upon, initiate, kick off, set in motion, start the ball rolling

Restaurant: dining experience, business establishment serving food, cafeteria, eatery, grill, greasy spoon, luncheonette

Alternate Challenge Statements:

- How might I embark upon a business establishment serving food?
- How might I launch an eatery?
- How might I initiate a luncheonette?

Use to: Formulate the Challenge

Origin: Parnes, S. (1967). *Creative Behavior Guidebook*. New York: Scribner.

DIVERGENT TOOLS

SCAMPER

Benefits

- Helps groups break out of ruts during divergence
- Generates more ideas
- Combines easily with other divergent tools

Instructions

1. Use SCAMPER (the mnemonic for Substitute, Combine, Adapt, Modify, Put to other uses, Eliminate, Rearrange) to stimulate new ideas while facilitating brainstorming.

   Substitute: What can we substitute? Are there parts, materials, ingredients, or segments that can be swapped in? Who else might be included instead? What other process might be used instead? Might we substitute something that doesn't belong here?

   Combine: What might be combined or blended? What sort of ensemble could be used or created? Might we combine parts or materials? How might we combine purposes? What products or processes will fit well together? How might we combine applications?

   Adapt: Can something be brought over to work in this context? Can we borrow an idea from a competitor or another industry? Does the past offer a similar situation?

   Modify (Magnify or Minimize)**:** How might we change the form (color, size, weight, shape)? What might we add, lengthen, strengthen, or subtract? How might we increase the value? What might we streamline? What might we change from the process, price, strategy, or offering? What might we increase or decrease the significance of?

   Put to other uses: What else might it be used for? How might the product be used to work for a different market? What might we take somewhere else to improve life?

   Eliminate: What might we get rid of or omit? What might we stop doing instead of fixing it? How might we simplify the process by removing steps? What might we get rid of to reduce complexity?

   Rearrange: What other patterns, arrangement, or layout might work? What might we reverse or transpose? How might we reverse engineer it? How might we change the focus to look at it backwards first? What if we turned it inside out or upside down?

Use to: Explore ideas

Origin: Eberle, R. (1971). *SCAMPER: Games for Imagination Development*. Buffalo, NY: D. O. K. Publishers.

DIVERGENT TOOLS

Forced Connections

Benefit

- Generates unusual and unexpected ideas

Instructions

Choose a random object (toy, orange, rubber band, table cloth), mental image (train, beach), or picture (zebra, a Monet, flower). There are two approaches you can use to generate ideas.

Approach 1:

Relationships

1. Ask, "When you look at (or think of) this thing, what ideas come to mind for addressing this challenge?"
2. Ask, "In what ways is the challenge like (the object, image or picture)?"
3. After you come up with some relationships, generate ideas these relationships stimulate.

   For example: "*The challenge is like an orange because it has a number of inter-connected sections." This might stimulate ideas to discover what holds the section together, look at each of the sections individually, or remove the barriers and create a seamless whole.*

Approach 2:

Characteristics

1. Brainstorm characteristics of the object.

   For example: *Ask yourselves, "What are the elements of this item and what else does it make me think of?"* Response: "*A table cloth may be smooth, white, foldable, soft, stain-resistant, woven, etc." The more characteristics you can generate, the better.*

2. Think about how each characteristic can stimulate new thinking around your challenge.

   For example: *"What new ideas can you create if you think about folding your challenge to make it smaller or adding a resistant characteristic to make it stronger?"*

Use to: Explore Ideas

Origin: Parnes, S. Gordon, W.J.J. (1971). *The Basic Course in Synectics*. Cambridge, MA: Porpoise Books. Geschka, H. (1980). *Methods and Organization of Idea Generation*. S. Gryskiewicz.

DIVERGENT TOOLS

Visual Excursion

Benefits

- A useful tool to reenergize a group during a brainstorming session and continue to elicit new ideas
- Generates novel and unusual ideas by working with metaphors

Instructions

1. Collect a series of intriguing visuals to use as stimuli. Use toys, objects in the room, or pictures. Pictures should not be readily identifiable.
2. Ask participants to relax and go on a mental excursion.

   Script: *"Allow your mind to drift away from the challenge and float to your favorite vacation spot. Focus on what it looks like, smells like, sounds like, and feels like. Notice the rich colors and beautiful weather."*
3. Come back and focus on the object. Write down any three observations, impressions, reactions, or thoughts about the object. Don't edit yourself. Record your observations.

   Prompts: *"What do you see? What do you feel like? What would it be like if you were here? What memories have you had like this? What experiences have you had like this? What might this taste/sound/smell/feel like?"*
4. Repeat step 3 with each visual stimulus.
5. Take each of your observations and make a connection to the challenge. Each connection should answer, ***"My challenge is like (name of stimulus) because...."*** Record your connection on post-its (one connection per post-it).

Use to: Explore Ideas

Origin: Parnes, S. Gordon, W.J.J. (1971). *The Basic Course in Synectics.* Cambridge, MA: Porpoise Books. Geschka, H. (1980). *Methods and Organization of Idea Generation.* S. Gryskiewicz.

DIVERGENT TOOLS

Action Plan

Benefit

- A highly useful tool to break down one big idea into discrete, manageable steps

Instructions

Diverge:

1. Begin with a solution statement beginning with **"What I see myself doing is ...."**
2. Using sticky notes, generate a list of all the possible actions (one action per sticky note) that might be taken in order to make your solution a reality. Generate possible sources of assistance (assisters) and possible sources of resistance (resisters). Generate actions to leverage your assisters or overcome resisters.

Converge:

4. Arrange the actions into clusters of **"short-term,"** **"medium-term,"** and **"long-term"** actions. You determine the time frames based upon your situation.
5. Within each cluster, arrange the steps in order.
6. For each action, specify who will be responsible and when it will be completed. Each step should also have someone who will check to ensure things are getting done.

   Make sure you create at least one action that can be completed in the next 24 hours – this will jump-start the process, making your proposed solution a reality.
7. Transfer the What, Who, By When, and Who Checks to a table for tracking.

   Add additional criteria as needed: "How," "With Whom" (who else will be helping), "Why," "Start Date," and "Success Indicators."

Use to: Formulate a Plan

	What?	Who?	By When?	Who Checks?
Short-term				
Mid-term				
Long-term				

Origin: Noller, R. B., Parnes, S. J., & Biondi, A. M. (1976). *Creative Action Book*. New York: Scribners.

Convergent Tools

CONVERGENT TOOLS

Dot Voting (Hits)

Benefit

- Useful when you have a large group of people who need to work together to build consensus and converge on options

Instructions

1. Review all items that were generated to ensure a shared understanding.
2. Give each person dot stickers. Everyone should have the same number of dots (or you can instruct everyone to make a mark).
3. Have everyone place a dot (or make a mark) beside the option they like best. (Ask people to choose first, then write them down, before they go up to place their dots beside their favorite ideas/options to avoid "group think").
4. Look for clusters with the most dots or "Hits." The clusters with the most "Hits" are the options that should be worked on first.

Hits are items that

Are on target	Jump off the page
Are relevant	Excite you
Are clear	Sparkle at you
Are interesting	Feel right
Intrigue you	Solve the challenge
Seem workable	Go in the right direction

Use in: All steps of CPS when engaging convergent thinking

Origin: The characteristics of a "Hit" were first presented by Roger Firestien and Donald Treffinger in the *Journal of Creative Behavior* (Vol 17, no. 1, 198).

CONVERGENT TOOLS

Highlighting

Benefits

- Helps you narrow down and focus on what is important
- Helps to screen, select, and sort ideas that are interesting, intriguing, or useful
- Gives a first pass-through for converging a list of ideas
- Condenses a large number of ideas into more meaningful or manageable categories

Instructions

1. Review all the ideas generated during the divergent steps. Keep in mind the Convergent Thinking Guidelines.
2. Have each participant mark the ideas that are "hits" (exciting, interesting, jump off the page) with either sticky dots, a magic marker, or by removing the sticky note (with the idea on it) to another location.

   Tip*: Give guidelines about how many ideas should be marked based on:*

   a) the total number of ideas you're working with

   b) the depth and breadth of ideas

   c) how many you want to consider taking into the next step

   For example*: With 100 ideas, you might ask each person to mark 3-5; with 20 ideas, you might ask everyone to mark 1-2.*
3. Identify all the ideas that relate to each other thematically and group them together on a clean page in clusters. Create a short 1-3 work headline for each cluster.
5. Restate the hot spots appropriately (as a problem statement, an idea, etc.).
6. Make sure that the cluster is restated specifically enough to be useful. If you are looking for ideas, make sure the restatement is stated as an idea. If it's a challenge question, make sure it has an appropriate **"How to..."** or similar stem on it.

Use in: All steps of CPS when engaging convergent thinking

Origin: Highlighting is a form of clustering. Driver, H. Kroeber, A. (1932) *Anthropology*. New York: Brace and Company.

CONVERGENT TOOLS

Evaluation Matrix

Benefits

- Creates a systematic way to analyze multiple solutions
- Helps build consensus as it allows the group to select and evaluate a variety of promising solutions against selected criteria

Instructions

After generating a number of possible solutions:

1. Generate criteria. Make a list of criteria to use to evaluate potential solutions (i.e., within our budget or will appeal to the target).
2. Choose the criteria that are most important or most influential for your decision.
3. Put the criteria into positive question form, so that answering YES gives the criteria a positive response.

   For example: *The answer should be YES when asked, "Will it be ___?" Write it as* "Will it be within our budget?" *rather than* "Will it be too expensive?")
4. Create a matrix, with the key criteria heading various columns. Simple challenges might have 3-4 criteria; more complex challenges might have more.

	Will it be within budget?	Will it be finished on time?	Is is revolutionary?
Option A			
Option B			

5. Use a simple rating system to indicate how well an idea satisfies each criterion.

   Potential rating systems:
   - Smiley faces: a frown doesn't satisfy; a horizontal line sort of satisfies; a smile satisfies a lot.
   - Scale of 1-5 where 1 doesn't satisfy the criterion and 5 completely satisfies it.
   - Satisfies = **+;** in the middle = **o;** doesn't satisfy = **–**.

6. Fill in the matrix one column at a time, comparing the solutions to each other against one criterion. This leads to increased objectivity and focus.
7. When you have filled in the entire matrix, you can get a sense of how your ideas stack up against each other.

   You are not conducting a mathematical exercise; you are looking for an overview.
8. Go back again, column by column, and see how you can strengthen each idea to improve its rating.

Once you have gone through the matrix a second time, select those ideas that perform best against the criteria for further development.

Use to: Formulate Solutions

Origin: Parnes, S. (1967). *Creative Behavior Guidebook*. New York: Scribner.

"Of all the gifts we have as humans, the one that stands out, giant-like above all the rest, is our ability to be creative. It is responsible for all the progress we enjoy today." — SIDNEY PARNES

CONVERGENT TOOLS

3 "I"s (Influence, Importance, Imagination)

Benefit

- Helps evaluate whether a goal, wish, challenge, or opportunity is appropriate for you or your group to address

Instructions

1. Do you (or your group) have **Influence** over the challenge? If the challenge is something completely out of your control or authority, you may not want to spin your wheels on it.
2. Is the challenge of **Importance** to you (or your group)? Are you motivated to address it, and will you have the energy to carry your solution through?
3. Does the challenge require **Imagination**? Will it call for new thinking or an innovative solution?

If you can answer "yes" to all three of these questions (Influence, Importance, Imagination), the situation will probably benefit from CPS.

If your answer to any of these questions is "no," you may want to think about redefining your challenge in a way that does meet the 3 "I"s criteria, or perhaps working on a different challenge.

Use to: Generate Ideas, Explore the Vision, and Formulate Challenges

Origin: Based on the work of Bill Shephard, Roger Firestien, Don Treffinger, and Scott Isaksen.

"Creativity takes courage." — HENRY J. KAISER

CONVERGENT TOOLS

PPCO (Pluses, Potentials, Concerns, Overcoming concerns)

Benefits

- Strengthens or evaluates an idea
- Avoids premature idea-killing by using the principle of "Praise First"
- Develops ways to overcome an idea's weaknesses
- Works on single ideas
- Creates motivation by looking at ways to overcome challenges

Instructions

1. **Pluses:** Make a list of at least three pluses, likes, or specific strengths of your idea by answering: What is good or unique about your idea now?
2. **Potentials:** Make a list of at least three opportunities starting with, **"It might ..."** What are speculations, spin-offs, or possible future gains from your idea? What are the ultimate potentials of this idea/what could it eventually lead to? What opportunities might result if your idea were implemented?
3. **Concerns:** Make a list of all concerns you have about your idea by answering "What concerns are there about this idea?" Phrase your answers in the form of a question starting with, "**How to ...,**" or "**How might ...,**" or "**In what ways might ...**" This invites solutions for how to overcome each one of these concerns, eliminates negative words/phrases.

   For example*: If you're concerned about the idea being too costly, say:* "How to make it affordable?" *not* "It'll cost too much" *or* "How not to make it so expensive?" *This allows for improvement of the idea.*
4. **Overcome:** Generate ways to overcome concerns one at a time, in order of their importance.
5. Modify and strengthen the original idea by leveraging the Pluses and Potentials, and incorporating the newly brainstormed ideas to Overcome the Concerns.
6. Write an improved statement of your solution: ***"Now what I see myself (us) doing is ..."***

Use to: Diverge/converge, generate ideas, refine preemptive feedback

Origin: PPC was developed by Diane Foucar-Szocki, Bill Shepard, and Roger Firestein, although it dates back to Aristotle, who advocated looking at pluses and minuses of any ideas. It later was evolved by Hedria Lunken who added the "O" to PPC — to deliberately include brainstorming ideas to overcome each concern.

Special Educator Tools

DIVERGENT TOOLS

Archaeological Dig

Benefit

- Helps group develop divergent thinking skills

Instructions

1. **Setup:** Put together paper bags with the same materials in each: materials should be common, household items – button, string, paper-clip, etc. Put about 10 items in the bag. Write a DIFFERENT instruction card for each bag. These should be written in the following format:

   "The items in this bag were found at an archaeological dig. It is thought that the inhabitants used them as musical instruments. How did they use them?"
2. Review the Divergent Thinking Guidelines.
3. Have the team share and then debrief.

Reflections:

_____

_____

Adaptations:

_____

_____

Extensions:

_____

_____

Notes:

_____

_____

_____

_____

DIVERGENT TOOLS

Creative Beings

Benefit

- Explores perceptions around what makes someone a "creative being"

Instructions

1. Setup: Cut roll paper into large sheets (6' x 3').
2. Divide group into small teams of 3-5 people. Instruct them that they will be working together to draw a life-size being. This is usually done by tracing one of the participants who is lying on top of the paper on the floor.
3. On the inside of the being, ask the teams to lists words and/or draw icons of what contributes/helps/encourages someone to be creative.
3. Around the outside of the being, ask the teams to write words or icons that describe what hinders or stops someone's creativity.

Reflections:

Adaptations:

Extensions:

Notes:

DIVERGENT TOOLS

Making Connections

Benefit

- Helps group develop divergent thinking skills

Instructions

1. **Setup:** For the Visual exercise, you will need a collection of pictures.

2. Review the Divergent Thinking Guidelines.

3. **Visual:**

- Ask each participant to select a picture.
- Start with one picture in the center. Then ask one participant to join her/his picture to the one shown. Ask the participant to describe how the picture connects to the one shown – by shapes, colors, design, category, etc.
- Have each person take a turn adding their picture to the previous one, connecting the new one to the previous participant's.

3. **Word:**

- Have everyone sit in a circle. Explain that the group will create a rhythm of two knee pats and two snaps. Model the pattern, which is that one person will say a word on the snaps. Then the next person will connect a word to the previous word on the next snaps. Continue around the circle.

  For example: Person #1 says the word "white on the snaps. Person #2 has two knee pats to think of a connection, then they say that word on the snap: "snow." Person #3 then connects to the word "snow" with "cold."

Reflections:

_____

Adaptations:

_____

Extensions:

_____

DIVERGENT TOOLS

Pass the Stick

Benefit

- Helps group develop divergent thinking skills

Instructions

1. Review the Divergent Thinking Guidelines.
2. Sit in a circle and pass a yardstick around. Each participant says, *"It's not a stick it's a _____."* They pantomime and USE it as something (tennis racket, golf club, microphone, trumpet, broom, etc), and the rest of the participants guess.

   Hint: Keep going – around the circle so you get to over 50 ideas.

   Extensions: Pass a scarf, a ruler, or a piece of string
3. Read *Not a Stick* by Antoinette Portis to the group.

Reflections:

_____

_____

Adaptations:

_____

_____

Extensions:

_____

_____

Notes:

_____

_____

_____

_____

DIVERGENT TOOLS

Please Don't ____ the Animals

Benefit

- Helps group practice divergent thinking skills

Instructions

1. Review the Divergent Thinking Guidelines.
2. Give each person/pair/small group a long piece of paper (adding machine paper works well). Ask them to generate as many verbs as possible to insert into the sentence *"Please don't _____ the animals"* within 3 minutes.
3. At the end of the time, teams can report how many verbs they generated.

Reflections:

Adaptations:

Extensions:

Notes:

Where brainstorming begins —
The Creative Education Foundation.

Our mission is to "Engage and develop thenext generation of creative thinkers and innovators." As a 501(c)(3) non-profit organization, we connect leading creativity experts and practitioners with beginners from across diverse backgrounds and fields.

Our dream is that all people — regardless of economic background, education, or culture — have access to the tools to solve challenges and create a better world.

Founded in 1954, The Creative Education Foundation (CEF) has a rich legacy. Our founder, **Alex Osborn,** and **Dr. Sidney J. Parnes** were leaders of the deliberate creativity movement. Their passion extended to many contributions, including:

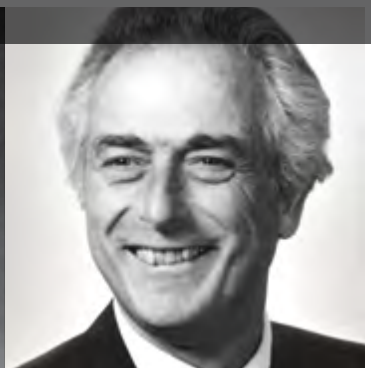
- Osborn co-founded the advertising firm BBDO and invented "brainstorming"
- Osborn wrote the classic book *Applied Imagination* (1953)
- Osborn and Parnes developed the Osborn-Parnes Creative Problem Solving Process
- Osborn and Parnes established the longest-running creativity conference (CPSI)

For more than 60 years, CEF has worked closely with leading corporations, academic institutions and community organizations.

We invite you to join us.

Alex Osborn
1888-1966

Dr. Sidney Parnes
1922-2013



ORIGINS OF CREATIVE PROBLEM SOLVING

Osborn, the O in the international advertising agency BBDO, formalized brainstorming in 1939 as a problem-solving tool at BBDO. Brainstorming was the first of many nominal group techniques for generating ideas.

Osborn studied creative people to identify the natural process of how they intuitively create good ideas. With the goal of approaching problems with greater imagination, he incorporated his learnings into the first versions of the CPS process, helping people learn how to be more deliberately creative.

A natural educator, Osborn believed that if people were going to be creative in business, they needed to learn creative thinking skills when they were in school. Osborn's *Applied Imagination*, published in 1953, was the first creativity textbook.

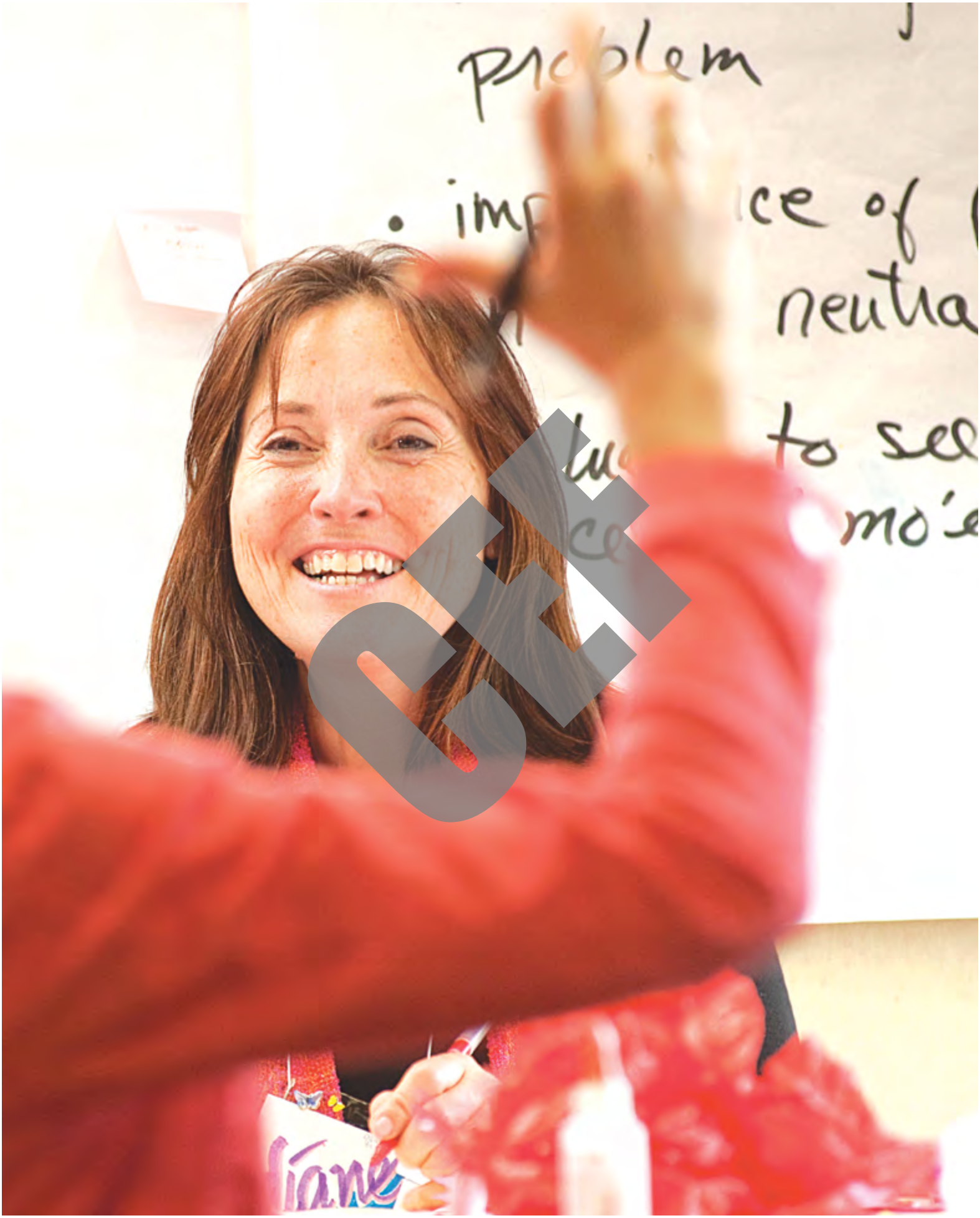
In 1954, Osborn created the Creative Education Foundation, which was sustained by royalties earned from his books. Along with Dr. Sidney Parnes, Osborn developed the "Osborn-Parnes Creative Problem Solving Process" (commonly referred to as CPS). That same year, launched the Creative Problem Solving Institute, the world's longest-running international creativity conference.

In 1967, Dr. Parnes started a pilot program in creativity at Buffalo State and became the founding director of what is now the International Center for Studies in Creativity (ICSC).

Despite the death of Osborn in 1966, Dr. Parnes continued to develop and modify Osborn's original seven stage CPS model. After numerous adaptations the Osborn-Parnes Five Stage CPS model was born. This model's stages were Fact Finding, Problem Finding, Idea Finding, Solution Finding, and Acceptance Finding. The advantage of this model was the depiction of the alternating process known as divergent and convergent thinking. This notion of divergent and convergent thinking occurs in every stage of this model.

In the early 1970s, Parnes launched the Creative Studies Project with colleague Dr. Ruth Noller. This truly pioneering initiative validated that creative studies content could indeed be taught and learned effectively. This allowed for creativity studies to gain traction and academic support.

Drs. Parnes and Noller continued teaching creative studies and in 1981 Dr. Scott Isaksen joined the faculty to assist in the now formalized Masters of Science degree in Creative Studies. In 1982 Dr. Parnes turned over the directorship of the center to Dr. Isaksen. With many fond memories and a tremendous sense of satisfaction, Dr. Sid Parnes retired in 1984 as a Professor Emeritus from Buffalo State College. Today Dr. Gerard Puccio heads ICSC, which continues to enrich the field with an evolving model and new research.



RESOURCES

Technology

Visuwords™ online graphical dictionary — Look up words to find their meanings and associations with other words and concepts. Produce diagrams reminiscent of a neural net. Learn how words associate. Enter words into the search box to look them up or double-click a node to expand the tree. Click and drag the background to pan around and use the mouse wheel to zoom. Hover over nodes to see the definition and click and drag individual nodes to move them around to help clarify connections.
http://www.visuwords.com/

Wordle is a toy for generating "word clouds" from text that you provide. The clouds give greater prominence to words that appear more frequently in the source text. You can tweak your clouds with different fonts, layouts, and color schemes. The images you create with Wordle are yours to use however you like. You can print them out, or save them to the Wordle gallery to share with your friends.
http://www.wordle.net/

Tagxedo turns words -- famous speeches, news articles, slogans and themes, even your love letters -- into a visually stunning word cloud, words individually sized appropriately to highlight the frequencies of occurrence within the body of text. You can select colours and shapes for the word clouds to add another level to the discussion.
http://www.tagxedo.com/

Socrative is a smart student response system that empowers teachers to engage their classrooms through a series of educational exercises and games via smartphones, laptops, and tablets.
http://www.socrative.com/

Animoto turns your photos and music into stunning video slideshows. You provide the photos, you pick the song, and we'll add the magic. Give it a try — it's fast, free and shockingly easy.
http://animoto.com/intro/animoto/30dyno?gclid=CMLGiLP2mb4CFak7MgodyhQAlQ

Comic Creator Tools

Comiker is a free site allowing you to create a comic without registration:
http://www.comiker.com/

Pixton is a good online comic development tool. This is a site that uses simple sketch and text. Nice tool:

http://www.pixton.com/home

Makebeliefscomix is a great and easy to use Flash-based resource. You can use this with students of any age. The User Interface provides you with a set of charactors with different emotions
http://www.makebeliefscomix.com/

ToonDoo explains it all in comic form.
http://www.toondoo.com/Home.toon

Useful resource: http://cogdogroo.wikispaces.com/StoryTools

Chogger allows you to create comics from photos, pictures, and webcam captures and add thought/speech bubbles. Fairly easy editing. Requires free sign-up.
http://chogger.com/

The Super Hero Squad allows users to create a comic strip or a comic book from pre-existing templates, backgrounds, characters, objects, sound effects and dialogue bubblues. Users can add creative dialogue and drag and drop items anywhere in the frame. No sign-up required.
http://superherosquad.marvel.com/create_your_own_comic

Creaza offers a variety of preloaded backgrounds and characters that you can manipulate similar to using photoshop skills. It allows for a wide range of creativity with helpful starting points.
http://www.creaza.com/cartoonist

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"If we cannot now end our differences, at least we can help make the world safe for diversity." — JOHN F. KENNEDY

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"The big question is whether you are going to be able to say a hearty Yes to your adventure." — JOSEPH CAMPBELL

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