

Creativity I

The Creative Person, Creative Process, and Creative Dramatics



... creativity does not happen inside people's head, but in the interaction between a person's thoughts and a socio cultural context. It is systemic rather than an individual phenomenon.

MIHALY CSIKSZI/NTMIHALYI (1996)

Creativity is an elusive factor in its relationship to giftedness.

JOYCE VANTASSEL-BASKA, ED. D (2004, p. 1)

There are many definitions of creativity, none of which is universally accepted . . . educators using the term creativity may be referring to very different constructs.

TREFFINGER, YOUNG, SELBY, AND SHEPARDSON (2002, p. 8)

There can be no more important topic in the education of gifted and talented children than *creativity*. Indeed, the two interrelated purposes of gifted education are (1) to help these children and adolescents become more self-actualized (Maslow, 1968), creative individuals and (2) to better enable them to make creative contributions to society. As stated by Cropley and Urban (2000), "Modern research on creativity, intelligence, and achievement showed that although students with high IQs obtained good grades both at school and university, they were consistently outstripped by those with not only a high IQ but also high creativity" (p. 485). Even Albert Einstein admitted, "When I examined myself, and my methods of thought, I came to the conclusion that the gift of fantasy has meant more to me than my talent for absorbing positive knowledge." There is obviously an important place for creative thinking in all domains of life.

This chapter and Chapter 9 are designed to help the reader better understand creativity and creative students, and to suggest ideas for stimulating creative growth. This chapter will review some basic features of creativity: (1) historic theories of creativity, (2) levels of creativity, (3) traits and characteristics of creative people and some important creative abilities, (4) the nature of the creative process, and (5) creative dramatics. The important topic of testing for

creative potential was discussed in Chapter 3 in conjunction with identification. Chapter 9 will focus more specifically on teaching for creative development.

THEORIES OF CREATIVITY

Philosophers, psychiatrists, and psychologists have attempted for many years to describe the construct and the principles of creativity. Figure 8.1 summarizes historic theories of creativity and emphasizes the importance of understanding creativity in western culture (Selby, Shaw, & Houtz, 2005). It is only, however, since the 1950s, after J. P. Guilford addressed the American Psychological Association and used the word *creativity* in his title, that it was described as an ability (Piiro, 2004). It is obvious from an examination of the theories of creativity in Figure 8.1 that descriptions refer not only to very different constructs, but also to different levels of creativity.

LEVELS OF CREATIVITY

Whereas all children and adults are capable of enjoying creative thought and production, they may function at different levels of creativity. Wilson (2004) refers to the first three levels as being attainable by all who are motivated, and the last two as within the reach of only those who are highly gifted. Below are the five levels that Wilson adapted from the work of A. Taylor (1959):

1. **Intuitive expressive level.** This creator expresses primitively, intuitively, and directly for the intrinsic joy of creativity.
2. **Academic and technical levels.** This creator learns the techniques and skills and adds power to the creative expression because he or she has mastered the academic and technical skills related to the creative work.
3. **Inventive level.** The inventor who has learned the academic or technical skills goes beyond skills and challenges the boundaries to experiment beyond tradition.
4. **Innovative level.** Originality and out-of-the-ordinary production or ideas are the hallmarks of this stage.
5. **Genius level.** The ideas and accomplishments of these creators are unique, defying explanation. This is the most unexplainable level of creative production.

Creative underachievers often remain at the first level of expression and avoid learning the academic and technical skills, for fear that those skills will interfere with their perceived personal, spontaneous, and unique creativity. Persuading them that teachers can provide techniques that enhance their level of creativity is no easy task. They tend to believe that intuitive spontaneity alone will permit them to ascend to, at least, level 4.

Csikszentmihalyi (1996) (recommended pronunciation by your first author is “Smith”; Davis, 2004) boiled these five levels down to two: the “big C”—creative people considered eminent in their area of expertise; and the “little c”—creative people who are creative in their everyday lives. Your authors are inclined to believe there is also a range of “middle c” for many who make small, but important, creative contributions in their fields of expertise, but may not be renowned for their contributions.

Csikszentmihalyi’s “little c” people are more likely to resemble those described by Maslow as self-actualized, creative people, whose characteristics are listed in Box 8.1 (Maslow, 1968, as cited in Davis, 2004).

CHARACTERISTICS OF CREATIVE PERSONS

Chapter 2 summarized recurrent personality, motivational, and biographical characteristics of creative children and adults. To review briefly, creative people frequently are high in self-confidence, independence, risk-taking, energy, enthusiasm, adventurousness, curiosity, playfulness, humor, idealism, and reflectiveness. They tend to have artistic and aesthetic interests, to be attracted to the complex and mysterious, and to need privacy and alone time. They tend to be more perceptive and intuitive than other people. An important characteristic is that they are willing to tolerate the ambiguity that accompanies engaging in creative problem solving. Most of these traits originally were uncovered by Frank Barron (1969, 1988) and Donald MacKinnon (1978) in their classic Berkeley studies of creative architects, writers, and mathematicians. These characteristics were found across the three very different domains.

Piiro (2005) summarizes four core attitudes among highly creative people: (1) naivete, (2) self-discipline, (3) risk-taking, and (4) group trust. The

Theory	Theorist	Description
Psychoanalytic/ Psychodynamic	Freud (1908/1959)	Creative process as conflict resolution, or as "sublimation," the production of something new or original, resulting from the modification of id-impulses into something more acceptable.
	Lee (1940)	Creative productivity as an effort to overcome destructive, disabling emotions manifested from the id-instinct.
	Kris (1952)	"Regression in service to the ego" permits individuals to access the dynamic energy of the unconscious while seeking the unique positive qualities of fantasies.
	Jung (1923)	Individuals access the "collective unconscious" or "archetypes," representing the sum of all human existence when creating, perceiving some universal quality or truth from human history and translating that perception into some real creative product.
	Arieti (1970)	The "seat" of creativity is the preconscious mind, but the process that occurs "there" is a unique combination of both primary (fantasy, wish-fulfillment) and secondary (logical, structured) processes. Tertiary process thinking, directed by the ego, accesses and unites both realms, producing a unique outcome.
	Csikszentmihalyi (1996), Gowan (1975)	The creative enterprise represents a point where all elements are in harmony, working symbiotically and directed to a natural and inexorable conclusion rising above the normal experience.
Self-growth, Developmental Positivistic	Rank (1932/1960)	The conflict between fantasy and reality is viewed as the ideal state of human nature, resulting in cognitive growth.
	Sinnott (1959)	Creativity is a natural, developmental life force. The nature of the conscious mind is inherently creative and directs the unconscious mind to action and ultimately forms and shapes our final products.
	Maslow (1968), White (1959)	The drive to create is the drive to actualization. Creativity is a "transcendent" or "peak" experience, representing the highest levels of achievement, leading to novel, original, or new ideas.
	Rogers (1954)	Creativity is the "emergence in action of a novel, relational product, growing out of the uniqueness of the individual. . . and the materials, events, people, or circumstances of his life . . ." (p. 71). Creative expression is enhanced by psychological safety and freedom.
	Abra (1997)	The need or impetus for self-expression is what unites creativity in all aspects of life (art or science, sports, religion, etc.). What consistently sets individuals engaged in the creative and problem-solving processes apart is their dedication, commitment, steadfastness, vigor, and intensity—or their motivation for creative work.
	Eysenck (1983, 1993, 1997)	Creativity is not an ability, but rather a personality variable.

FIGURE 8.1 Theories of Creativity. Source: Reprinted by Permission of SAGE Publications. Selby, Shaw, & Houtz, *Gifted Child Quarterly*, 49(4). pp. 300–314, Copyright © 2005 by SAGE Publications.

BOX 8.1**Maslow's 15 Characteristics of Self-Actualized People**

According to Maslow, self-actualized people

- perceive reality more accurately and objectively. They are not threatened by the unknown, and they tolerate and even like ambiguity.
- are spontaneous, natural, and genuine.
- are problem-centered, not self-centered or egotistical. They have a philosophy of life and, probably, a mission in life.
- can concentrate intensely. They need more privacy and solitude than do others.
- are independent, self-sufficient, and autonomous. They have less need for popularity or praise.
- have the capacity to appreciate again and again simple and commonplace experiences. They have a *zest* for living and an ability to handle stress.
- have (and are aware of) their rich, alive, and intensely enjoyable “peak experiences”—moments of intense enjoyment.
- have a high sense of humor, which tends to be thoughtful, philosophical, and constructive (not destructive).
- form strong friendship ties with relatively few people, yet are capable of greater love.
- accept themselves, others, and human nature.
- are strongly ethical and moral in individual (not necessarily conventional) ways. They are benevolent and altruistic.
- are democratic and unprejudiced in the deepest possible sense. They have deep feelings of brotherhood with all mankind.
- enjoy the work of achieving a goal as much as the goal itself. They are patient, for the most part.
- are capable of detachment from their culture, and can objectively compare cultures. They can take or leave conventions.
- are creative, original, and inventive, with a fresh, naïve, simple, and direct way of looking at life. They tend to do most things creatively, but do not necessarily possess great talent.

naivete refers to the openness with which creative people observe the obvious with a fresh and new perspective. The attitude of driving self-discipline is directed specifically toward expression within the creator's chosen area of creativity, and much to the frustration of teachers, doesn't necessarily include the agendas of others. Risk-taking in creativity, Piirto reminds us, does not require mountain climbing or bungee jumping. Instead, it demands the courage to stumble, fail, and return resiliently from rejection. The attitude of group trust required, specifically for collaborative creativity, could apply to performing in theater or dance, launching a satellite to Mars, or starting a new advertising business. These four attitudes, states Piirto, would apply across creative domains.

Further—as noted earlier—sometimes these traits and attitudes will be troublesome to teachers.

Especially, the admirable characteristics of independence and high energy, combined with nonconformity and unconventionality, may lead to stubbornness, resistance to teacher (or parent) domination, uncooperativeness, indifference to accepted conventions, cynicism, too much assertiveness, sloppiness, low interest in details, a tendency to question rules and authority, forgetfulness, overactivity, uncommunicativeness, and the feeling that the rest of the parade is out of step. Because of their high energy, eagerness, inquisitiveness, rapid talking, and overactivity, some creative students have been diagnosed as having Attention Deficit Hyperactivity Disorder (ADHD). They are medicated to calm them down (Cramond, 1994; Rimm, 2008c; Webb, Amend, Webb, Goerss, Beljan, & Olenchak, 2005; see also www.sylviarimm.com). The nasty problem is this: Some gifted students *do* have ADHD (Kaufman, Kalbfleish, &

Castellanos, 2000). (The ADHD problem is elaborated in Chapter 15.)

While we are on the topic of mental health problems, let us note that one-fourth to one-third of historically eminent persons (Walberg, 1988) and the majority of eminent artists and writers (Piirto, 2005; Richards, 1990, 1999) have had or have depression, manic-depressive disorder (now known as bipolar disorder), or other mental health problems. Noted Simonton (2003), "Genius-level talents probably reside at the delicate boundary between a healthy and an unhealthy personality" (p. 362). Such unconventional persons may entertain bizarre thoughts and analogies and, in manic periods, produce many outstanding works. But those who "go too far . . . into never-never land may never develop their gifts" (p. 362). Noted Richards, if Vincent van Gogh had been given antidepressants, he might have delightedly exclaimed, "I feel like painting happy . . . clowns on black velvet!" (p. 300).

Perhaps the theory that best explains the plethora of mental health problems among creatively eminent persons is Dabrowski's Theory of Positive Disintegration (TPD). He argues that intense negative emotions, moods, and overexcitabilities set the stage for advanced development, precisely because they are disintegrating. Coping or reintegrating these negative emotions allows creators to achieve more advanced emotional development, and their creative products may be part of that developmental struggle (Mendaglio, 2008).

Csikszentmihalyi's (1996) (more correctly pronounced CHICK-sent-me-hi) list of characteristics of creative persons also provides insight into why creative persons may at times seem to others to be mentally unhealthy. They have complex paradoxical and extremely opposite characteristics within the same person. Those characteristics are not a compromise of two extreme differences, but are opposite traits or activities coexisting within the same individual. Befriending such a person could be an exciting challenge. Csikszentmihalyi's list of complex characteristics follows:

Paradoxical and Complex Characteristics of Creative Persons

1. Much physical energy, but also often quiet and at rest
2. Smart, yet naïve; uses both divergent and convergent thinking

3. Playfulness and self-discipline (endurance)
4. Imaginativeness rooted in a sense of reality
5. Both extroversion and introversion
6. Both humble and proud
7. Tendency toward androgyny
8. On the one hand, traditional and conservative, and on the other, rebellious and iconoclastic
9. Passionate and objective
10. Sensitivity and openness to both suffering and pain, and also capable of great enjoyment

The biographical characteristics of creative individuals include some unsurprising ones—for example, a background filled with creative activities and hobbies. Frequent performances in dramatic productions are a very strong indicator of creativeness, because such performances necessarily require important creative traits (humor, energy, aesthetic interests, confidence, and risk-taking, for example). More subtle biographical characteristics of creativity include preferring friends who are younger and older, and having had an imaginary playmate as a child. Naturally, not all characteristics apply to all creative students, and some characteristics are domain specific. For example, Piirto (2005) points to the young poet's inspiration by language, whereas the inspiration to the aspiring scientist, musician, or artist is less likely to be language specific and might be a telescope, piano, or paintbrush.

Many of these (positive) characteristics probably can be enhanced by a creativity-conscious teacher. Indeed, as we will see in the next chapter, there is every reason to believe that attitudes and personality traits can be changed to produce a more flexible, creative, and self-actualized person.

Torrance (1979, 1981b) itemized other nontest indicators of creativeness in the kinesthetic and auditory domains, although again these creative characteristics could be unrelated to creativity in math or science:

shows skillful, manipulative movement in crayon work, typing, piano playing, cooking, dressmaking, and so on;

shows quick, precise movements in mime, creative dramatics, and role-playing;

works at creative movement activities for extended periods;

displays total bodily involvement in interpreting a poem, story, or song;

becomes intensely absorbed in creative movement or dance;

interprets songs, poems, or stories through creative movement or dance;

writes, draws, walks, and moves with rhythm and is generally highly responsive to sound stimuli;

creates music, songs, and so on; and

works perseveringly at music and rhythmic activities.

The characteristics listed here and in Chapter 2 should help the reader recognize creative children

and adolescents in the classroom. The lists also might improve one's patience with the obnoxious student who shows too many of the negative traits. Perhaps the high energy, overassertiveness, unconventionality, resistance to adults, stubbornness, inquisitiveness, and so forth require constructive redirection.

Note also that many academically average and below-average students will demonstrate marvelous creative talent—for example, in art, dance, computers, or any other area in which the student possesses special knowledge and skills.

Is it easy to recognize creative talent? See Box 8.2.

BOX 8.2

Is It Easy to Recognize Creative Talent?

Although an awareness of traits of creative people will help us recognize creative students, we are not likely to reach perfection in our identification of creative talent. Consider these creative persons who were *not* recognized by their teachers, professors, or supervisors:

- *Albert Einstein* was 4 years old before he could speak and 7 before he could read; he performed badly in almost all high school courses.
- *Thomas Edison* was told by his teachers that he was too stupid to learn.
- *Werner von Braun* failed ninth-grade algebra.
- *Winston Churchill* was at the bottom of his class in one school and twice failed the entrance exams to another.
- *Pablo Picasso* could barely read and write by age 10. His father hired a tutor—who gave up and quit.
- *Louis Pasteur* was rated mediocre in chemistry at the Royal College.
- *Charles Darwin* did poorly in the early grades and failed a university medical course.
- *F. W. Woolworth* worked in a dry goods store when he was 21, but his employers would not let him wait on customers because he “didn’t have enough sense.”
- *Walt Disney* was fired by a newspaper editor because he had no good ideas.
- *Caruso's* music teacher told him, “You can’t sing, you have no voice at all!”
- *Louisa May Alcott* was told by an editor that she could never write anything popular.
- *Charles Dickens*, *Claude Monet*, *Isadora Duncan*, and *Mark Twain* never finished grade school.
- *George Gershwin*, *Will Rogers*, both *Wright brothers*, and newscaster *Peter Jennings* dropped out of high school; *Harrison Ford* (*Indiana Jones*) and *Leo Tolstoy* flunked out of college.
- A 1938 letter found in 1991 said that western movie star *Gene Autry* “needed to improve his acting,” that an acting course was “evidently wasted,” and that “he needed darker makeup to give him the appearance of virility.” Replied the 83-year-old Autry, “A lot of that is true.”
- *Katie Couric* was fired from her first job with CNN and told by the producer that she would never make it on TV.
- *Bill Gates*, founder of Microsoft, dropped out of Harvard University (but we should remind students that he achieved enough to be admitted).

Though amusing, such historical facts raise our awareness of the complexity and subtlety of creative talent.

CREATIVE ABILITIES

There are a great many intellectual abilities that contribute in one way or another to creative potential. Indeed, it would be difficult to isolate mental abilities that have nothing to do with creativeness. The list that follows includes seemingly important creative abilities. Most have appeared elsewhere in the creativity literature, especially in Torrance's work (Torrance, 1962, 1965, 1979, 1980, 1987, 1995). The first four are the classic Guilford/Torrance *fluency*, *flexibility*, *originality*, and *elaboration* abilities, which are measured by the Guilford (1967) tests and the *Torrance Tests of Creative Thinking* (Torrance, 2006). Some people have mistakenly assumed that these four are a definitive and exhaustive list of creative abilities, which is not true at all.

Fluency. The ability to produce many ideas in response to an open-ended problem or question. The ideas may be verbal or nonverbal (e.g., mathematical or musical). Other names are "associational fluency" and "ideational fluency."

Flexibility. The ability to take different approaches to a problem, think of ideas in different categories, or view a situation from several perspectives.

Originality. Uniqueness, nonconformity.

Elaboration. The important ability to add details, develop, embellish, and implement a given idea.

Problem finding, problem sensitivity, problem defining. An important and complex syndrome that includes abilities to (1) detect difficulties, (2) detect missing information, (3) ask good questions, (4) identify the "real" problem, (5) isolate important aspects of a problem, (6) clarify and simplify a problem, (7) identify subproblems, (8) construct a problem on which to work, (9) propose alternative problem definitions, and (10) define a problem more broadly. Abilities 9 and 10 open the problem to a wider variety of solutions.

Visualization. The ability to fantasize and imagine, "see" things in the "mind's eye," and mentally manipulate images and ideas (Daniels-McGhee and Davis, 1994).

Ability to regress. The ability to think like a child, whose mind is less cluttered by habits, traditions, rules, regulations, and a firm knowledge of "how it ought to be done."

Analogical thinking. The ability to borrow ideas from one context and adapt them to another context; or the ability to borrow a solution to one problem and transfer it to another problem.

Evaluation. The important ability to separate relevant from irrelevant considerations; to think critically; to evaluate the "goodness" or appropriateness of an idea, product, or problem solution.

Analysis. The ability to analyze details, separate a whole into its parts.

Synthesis. The ability to see relationships—to combine parts into a workable, perhaps creative, whole.

Transformation. The ability to adapt something to a new use; see new meanings, implications, and applications; or creatively change one object or idea into another. Transformation is an extremely important creative ability.

Extend boundaries. The ability to go beyond what is usual—to use objects in new ways.

Intuition. The ability to make "mental (intuitive) leaps," make inferences, or see relationships, on the basis of little information; the ability to "read between the lines."

Predict outcomes. The ability to foresee the results of different solution actions and alternatives.

Resist premature closure. The ability to defer judgment and not jump on the first idea that comes along. Many students are deficient in this ability.

Concentration. The ability to focus on a problem for long periods, regardless of distractions.

Logical thinking. The ability to deduce reasonable conclusions and to separate the relevant from the irrelevant.

Aesthetic thinking. Sensitivity to and appreciation of beauty in art, design, and nature.

Some other creative abilities are the ability to see structure in chaos; to avoid mental sets and perceptual sets; to think critically; to anticipate consequences; to make good decisions; to understand complex issues; and to adapt present knowledge to new problems (Davis, 2003b; Tardif & Sternberg, 1988).

If we take a broad view of *creative abilities*, many other thinking skills (which will be described in Chapter 10) also could be seen as abilities important to creative thinking and problem solving—for example, planning, reasoning, considering all factors, prioritizing, discovering relationships, and making inferences. Some creative personality traits also could be viewed as *abilities*—for example, independence, risk-taking, humor (which is always built of surprising idea combinations), curiosity, reflectiveness, perceptiveness, tolerance for ambiguity and disorder, spontaneity, artisticness, open-mindedness, adventurousness, and, probably, others (Davis, 2003b). Of course, in any scientific, business, artistic, or social field there are innumerable learned skills and abilities that are essential for creative thinking within the particular knowledge area.

THE CREATIVE PROCESS

There are several ways to view the creative process (Davis, 1998). First, the traditional approach is to describe a sequence of *stages* through which one might proceed in solving a problem creatively. Second, the creative process can be viewed as a *change in perception*—“seeing” new idea combinations, new relationships, new meanings, or new applications that simply were not perceived a moment before.

A third approach to understanding the creative process is to examine creative thinking *techniques*—strategies used by creative individuals to produce the new idea combinations and relationships that creative ideas and products comprise. Creativity techniques appear in Chapter 9.

Steps and Stages in the Creative Process

THE WALLAS MODEL The best-known set of stages in the creative process is the *preparation, incubation, illumination, and verification* stages suggested in 1926 by Graham Wallas. The *preparation* stage

includes clarifying and defining the problem, gathering relevant information, reviewing available materials, examining solution requirements, and becoming acquainted with other innuendos or implications, including previously unsuccessful solutions. This stage basically involves clarifying “the mess.”

The *incubation* stage may best be viewed as a period of “preconscious,” “fringe-conscious,” “off-conscious,” or even “unconscious” activity that takes place, perhaps deliberately, while the thinker is jogging, watching TV, playing golf, eating pizza, or snoozing. Guilford (1979) suggested that incubation takes place during reflection, a pause in action, and that some people simply are more reflective than others. Many creative people keep a pad and pencil on their bed stand or a small notebook (idea trap) in their pocket in order to jot down ideas for incubated problems.

The third stage, *illumination*, is the “Eureka” or “Aha!” experience. A solution appears—usually, suddenly, although it may follow weeks of work and incubation—that seems to match the requirements of the problem.

The final stage, *verification*, as the name suggests, involves checking the workability, feasibility, and/or acceptability of the illumination.

Wallas’s four stages resemble steps in the classic scientific method: State the problem and propose hypotheses (*preparation*), plan and conduct research (during which *incubation* seems unavoidable), then evaluate the results (*verification*, which had better include one or more *illuminations*). Note also that the stages are not an invariant sequence. Stages may be skipped, or the thinker may backtrack to an earlier stage. For example, preparation often leads directly to a good, illuminating idea; or, alternatively, if the verification confirms that an idea will not work or will not be acceptable, the thinker may skip back to the preparation or the incubation stage.

One often-noted oversight was ignoring a step of *implementation*: The solution must be elaborated and carried out. Cropley’s (1997; Cropley & Urban, 2000) extension of the Wallas model solves this oversight and others. His seven steps are *preparation, information* (learning or remembering special knowledge), *incubation, illumination, verification, communication* (achieving closure, gaining feedback, showing the

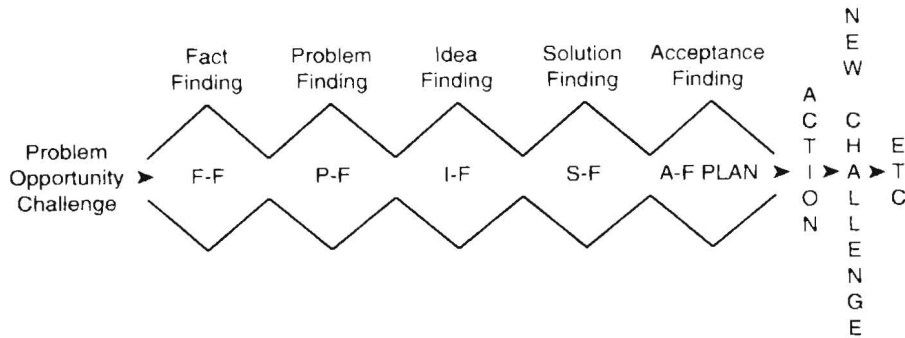


FIGURE 8.2 The Creative Problem Solving (CPS) Model.

product to others), and *validation* (evaluating relevance and effectiveness by judges, e.g., a teacher).

THE SYSTEMS MODEL OF CREATIVITY

Csikszentmihalyi (1996) described creativity as the interactions of three parts of a system. The first part is the domain, and each domain includes its own rules and procedures. For example, math, music, art, and physical science are all domains. The second part is the field. The field includes the professionals—the gatekeepers who determine what creations will be accepted within the domain. In theater it might be the critics, other directors and writers; in science it would be other scientists who specialize in a particular area of science. The last component of the system is the individual person who creates within the domain. Creativity happens when the individual invents, discovers, or creates within the domain and his or her creations are accepted as novel and valuable by others who are established in the field. If any one of the three components is absent, the product does not become valued as creativity at the time. In some cases, the creator has contributed within the domain, but those within the fields did not accept the creation for many years. This can occur in many domains including the arts and sciences. Most of us are familiar with artists and musicians whose work was not appreciated during their lifetimes, although the same work is now valued at many millions of dollars—thus, the all-too-familiar references to “starving artists” and “creators who were ahead of their times.”

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set of five stages originated by Alex Osborn (1963) and more recently articulated by Sidney Parnes (1981) and by Donald Treffinger and his colleagues (Treffinger & Isaksen, 2005; Treffinger, Isaksen, & Dorval, 1994a, 1994b). In addition to the five steps represented in Figure 8.2, Parnes and Treffinger and colleagues described a sixth step, the preliminary one—called *mess finding*—of locating a challenge, opportunity, need, or problem to which to apply the model. To be accurate, Osborn (1963) described his original model in just three stages, which subsume the others: (1) *Fact finding* included identifying a problem and gathering facts; (2) *idea-finding* is unchanged; (3) *solution-finding* included evaluating and implementing ideas.

We will look briefly at the five core steps of *fact finding*, *problem finding*, *idea finding*, *solution finding* (idea evaluation), and *acceptance finding* (idea implementation). The five steps are useful because they guide the creative process—they tell you what to do at each step to eventually produce one or more creative, workable solutions. One noteworthy feature, represented by the diverging and converging lines at each step in Figure 8.2, is that each of the five steps first involves a divergent-thinking phase in which lots of ideas (facts, problem definitions, potential solutions, evaluation criteria, implementation ideas) are generated, and then a second, convergent phase in which only the most promising ideas are selected for further exploration.

FACT FINDING The first stage, *fact finding*, involves “listing all you know about the problem or challenge” (Parnes, 1981). For example, let’s say the

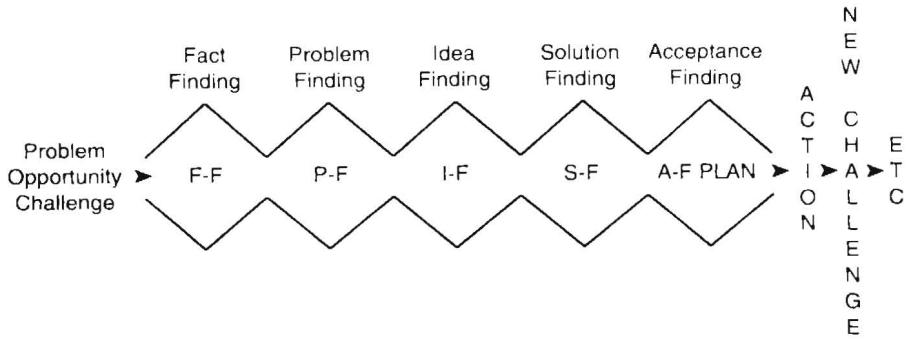


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problem is thinking of ways to stimulate creativity in an elementary classroom. An individual or group first would list all of the facts they could think of relating to training creative thinking and, perhaps, to the nature of creativity and creative abilities. Parnes recommends the use of *who*, *what*, *when*, *where*, *why*, and *how* questions:

Who is or should be involved?

What is or is not happening?

When does this or should this happen?

Where does or doesn't this occur?

Why does it or doesn't it happen?

How does it or doesn't it occur?

The list of ideas is then convergently narrowed to a smaller number of facts that might be especially productive.

PROBLEM FINDING The second stage, *problem finding*, involves listing alternative problem definitions. One principle of creative problem solving is that the definition of a problem will determine the nature of the solutions. It helps to begin each statement with, "In what ways might I (we) . . . ?" (e.g., find lists of strategies, locate someone who knows about training creativity, locate books on the topic, have the kids themselves solve the problem, and so on).

One or more of the most fruitful definitions is selected for the next stage.

IDEA FINDING *Idea finding* is the brain-storming stage in which ideas are freely listed for each problem statement accepted in the second stage.

SOLUTION FINDING In the fourth stage of *solution finding*, criteria for idea evaluation are listed—for example, Will the strategy strengthen important creative abilities? Will it strengthen good creative attitudes? Will it teach usable creative thinking techniques? Will it cost too much? Will it take too much time? Are the materials available? Will the principal and teachers accept it? Will the children enjoy it?—and so on. The list may be reduced to the most relevant criteria.

Sometimes, an *evaluation matrix* is prepared with possible solutions listed on the vertical axis and criteria across the top (see Figure 8.3). Each idea is

	Strengthen Abilities?	Strengthen Attitudes?	Teach Techniques?	Cost Too Much?	Use Too Much Time?	Materials Available?	Principal, Teachers Accept It?	Children Cooperate?	Total Score
Use Brainstorming									_____
Teach Techniques									_____
Use Syntectics									_____
Find Exercises									_____
Creative Drama									_____
Art, Handicrafts									_____
Creative Writing									_____
Research Projects									_____

FIGURE 8.3 Example of an Evaluation Matrix. Each idea is rated on a 1 (low) to 5 (high) scale according to each criterion. Total scores are then tallied.

rated according to each criterion (perhaps on a 1 to 5 scale), and the ratings are entered in the cells and then totaled to find the "best" idea(s).

ACCEPTANCE FINDING Finally, *acceptance finding* (or implementation) amounts to thinking of "ways to get the best ideas into action" (Parnes, 1981). It may involve creating an *action plan* (Treffinger, Isaksen, and Dorval, 1994a, 1994b). Treffinger (1995a) and colleagues noted that acceptance finding involves searching for *assisters* and *resisters*. Assisters are people ("key players"); essential resources; and the best times, places, and methods that will support the plan and contribute to successful implementation. One also must identify *resisters*—obstacles such as contrary people, missing materials, bad timing, ineffective methods, or other matters that can interfere with acceptance. Said Treffinger, one makes the best possible use of assisters, and avoids or overcomes sources of resistance.

In his inspiring book *The Magic of Your Mind*, Parnes leads the reader through problem after problem, with the goal of making the five steps habitual and automatic. That is, when encountering a problem, challenge, or opportunity, one quickly would review relevant facts, identify various interpretations

of the problem, generate solutions, think of criteria and evaluate the ideas, and speculate on how the solution(s) might be implemented and accepted.

Parnes spent 30 years as president of the Creative Education Foundation and had much experience teaching creative problem solving. Learning these steps—supplemented with creative attitudes and some idea-finding strategies—is his best recommendation for becoming a more creative problem solver and a more effective self-actualized human being.

In the classroom, the CPS model would be used to guide a creative-thinking session that (1) improves students' understanding of the creative process, (2) exposes them to a rousing creative-thinking experience, and (3) solves a problem. With much practice with the steps, students might become habitual creative thinkers, as Parnes intended.

Parnes (1981) noted that “the five steps are a guide rather than a strict formula. Frequently, a change of sequence may be introduced into the process; and it is always advisable to provide plenty of opportunity for incubation.” While eating 1½ chocolate sundaes, which Parnes ordered, he explained to one author (Davis) that people tend to use the five stages too rigidly. On a napkin he scribbled a star-shaped model enclosed in a circle (Figure 8.4) and emphasized that—if it helps the creative process—one may flexibly move directly from any one step to any other.



FIGURE 8.4 An Alternative Conception of the Creative Education Foundation Stages Emphasizing That One May Flexibly Move from Any Stage to Any Other.

Treffinger, Isaksen, and Dorval (1994a; see also 1994b) described how *hits* and *hot spots* can be used in the five CPS steps. *Hits* are ideas that strike the problem solver as important breakthroughs—directions to be pursued further because they could form the basis for a good solution. Groups of related hits are called *hot spots*. Hot spots thus are “groups of several (two or more) hits that all deal with a common theme, issue, or important dimension of the mess” (p. 45). In the convergent part of each CPS step, hits and hot spots are excellent leads for further exploration.

The CPS model may be taught to secondary students and even elementary children, as in the book *CPS for Kids* (Eberle & Stanish, 1996). The *Future Problem Solving* program, summarized in Chapter 6, is based on the CPS model.

Finally, an important message in the CPS model is that enrichment programs for teaching creative thinking should not focus totally on the brainstorming and divergent thinking that stage 3, *idea finding*, comprises. Realistic creative thinking includes at least the other CPS stages of clarifying the mess, gathering facts and data, generating or selecting a problem definition, evaluating the ideas, and implementing the chosen solution(s).

The CPS model is used effectively with typical students, but has also had dramatic impact in use with marginalized adolescent populations including high school dropouts and disenfranchised Aboriginal teens. It has even reduced recidivism among Native Canadian inmates. The authors (McCluskey, Baker, & McCluskey, 2005) explain that CPS was used in combination with career exploration and mentoring with these high-risk populations.

PIIRTO'S CREATIVE PROCESS (2005) To put “I”cing on the creativity cake, Piirto has observed seven interesting “I”s of the creative process: Inspiration, Imagery, Imagination, Intuition, Insight, Incubation, and Improvisation. Whereas all “I” stages surely appear in the creative process, perhaps Piirto would not be offended if the authors, in their collaborative, creative spirit, added one more important “I” stage, sometimes forgotten by creative students—Implementation—to include the important steps involved in carrying out creative ideas or products to closure.

THE CREATIVE PROCESS AS A CHANGE IN PERCEPTION

Many creative ideas and problem solutions result from a change in perception—the usually abrupt experience of “seeing” a new idea combination, new relationship, new meaning, new application, or new perspective on a problem. This phenomenon occurs whether the transformation is a simple modification of a cookie recipe (e.g., substituting mint candies for chocolate chips) or a complex discovery in engineering, medicine, or astronomy.

One simple way to illustrate the sudden perceptual change is with visual puzzles. You will find yourself exclaiming, “Oh! There it is!” or “Now I see it!”

We do not understand this sudden perceptual change or mental transformation particularly well. In some simple cases the “Eureka!” seems due merely to viewing (or visualizing) one or two objects or ideas and then mentally modifying them, combining them, or otherwise creating a new meaning or relationship; or to suddenly seeing a relationship between your problem and a more familiar one. For example, a candy-bar mogul, always alert for new products, may receive a sample package of macadamia nuts on an airline flight and instantly “see” a chocolate-macadamia treat.

The discussion of creative-thinking techniques in the next chapter will address some unconscious creative processes that have been made conscious, knowable, and teachable. Most of these techniques force the thinker to “see” new relationships and transformations of ideas.

CREATIVE DRAMATICS

Creative dramatics definitely is a unique classroom activity. As with other creativity exercises, creative dramatics stimulates divergent thinking, imagination, and problem solving. It also may strengthen sensory awareness, concentration, control of the physical self, discovery and control of emotions, humor, self-confidence in speaking and performing, expanded language abilities, empathic and humanistic understanding of others, general personality growth, and even critical thinking (e.g., Carelli, 1981;

Cresci, 1989; Davis, Helfert, & Shapiro, 1992; McCaslin, 1974; Tatar, 2002; Way, 1967). It also is as fun as it is beneficial. Sessions are not difficult to lead: The two main requirements are a good sense of humor and enough energy to crank up a people machine or wade through a peanut-butter swamp.

Samples of creative dramatics activities are described in the categories of *warm-ups*, *movement exercises*, *sensory and body awareness exercises*, *pantomime*, and *playmaking*.

Warm-Up Exercises

Any creative dramatics session must begin with some simple loosening-up exercises. These movements stretch a few muscles, but require little or no thinking. The leader narrates and illustrates. Following are some suggestions:

HOLDING UP THE CEILING Students strain to hold up the ceiling, slowly letting it down (to one knee), then pushing it back up into place.

BIGGEST THING, SMALLEST THING Everyone stretches his or her body into the “biggest thing” he or she possibly can. No one has any trouble guessing what the second part of the exercise is.

STRETCHING There are many ways to stretch. One strategy is to have students begin with their heads and work down, stretching then relaxing every part of the body. Vice versa, begin with the toes. Either may be done lying down.

WARM UP AT DIFFERENT SPEEDS Children run in place in slow motion, then speed up until they are moving very fast. Variations include jumping, skipping, or hopping.

Movement Exercises

CIRCLES The group stands in a large circle. Each participant, in turn, thinks of a way to make a circle by using his or her body. It may be a fixed or moving circle, using part or all of the body. All others must make the same circle. Names add to the fun—“This is a halo circle,” “This is a shoulder circle,” “This is a chicken circle,” “This is a Groucho Marx circle.” Circles will be more original if originality is clearly encouraged.

MIRRORS Everyone needs a partner. One person becomes a mirror who mimics the movements of the partner. Roles are reversed in about 3 minutes.

CIRCUS Each child becomes a different circus performer or animal. Variations include the leader directing what everyone should be—for example, tightrope walkers, trained elephants, lion tamers, jugglers, and so forth.

PEOPLE MACHINES This is a favorite (at least with college students). There are two main strategies. Students can form *groups* of 6 to 12 persons and take 10 or 15 minutes to design and practice their “machine,” which they form with their bodies. The machine presentations are performed one at a time for the others, who try to guess what the machine is. (Warning: Don’t allow the machine to dismantle prematurely just because someone guesses what it is.) Alternatively, with the *add-on* method, an idea for a machine is agreed upon and then one person starts the action. Others add themselves. Sounds—beeps, dings, buzzes, pops, and so on—are recommended. One of the best is an old-fashioned pinball game, which can absorb 50 volunteers, including a pinball player and several, preferably crazy, balls.

OBSTACLES With chalk, the leader draws a “start” and “finish” line on the floor, about 8 feet apart. One at a time, each student makes up an imaginary obstacle that he or she must climb over (past, through, under, around) to get from start to finish. Because only one person participates at a time, it works best with small groups.

ROBOT WALK Each person is a robot with a unique sound and walk. Whenever one robot touches another robot, both stop, sit down, and begin again, rising with a new sound and a new walk.

BALLOON BURST There are two main versions. First, each person is a balloon who is blown up, and up, and up. The balloon can be released and zip around the room, or else blown up until it pops. In the second version the entire group is one balloon that is blown up to the limit, then bursts.

CREATIVE LOCOMOTION Have children walk like a Crooked Man, the Jolly Green Giant, Raggedy Ann,

a robot, and so forth; run like a squirrel, mouse, Miss Muffett frightened by a spider, or the slowest person in the world running for a bus; jump like a kangaroo, popcorn, a jack-in-the-box; or walk through a peanut-butter swamp, flypaper, a jungle, a room whose floor is covered with tacks, deep sand, or deep Jell-O. The leader and students call out new characters, animals, substances, surfaces, and so on.

MAKING LETTERS Have individuals or two people shape their bodies to become alphabet letters. Others guess the letter. A small group can spell a word.

IMAGINARY TUG-OF-WAR Ask for 10 volunteers (or pick them, if reluctance prevails). They are divided into two 5-person teams. The leader narrates: “This side is struggling hard and seems to be winning. Now the other side is recovering. Look out! The rope broke!” Warn them to listen to the narrator and be sure they hear the last instruction.

Sensory and Body Awareness

TRUST WALK (OR BLIND WALK) This exercise is a must. Each person has a partner. The member with eyes shut, or blindfolded, is led around the room, under tables and chairs, and allowed to identify objects by touch, smell, or sound. Students walk down the hall, get a drink of water, try to read names or numbers on doors (such as “Boys”), go outside and explore trees, the sun, shade, a flower, and so on. Partners trade roles after about 10 minutes. Ask about experiences and discoveries in a follow-up discussion.

EXPLORING AN ORANGE Give everyone an orange to examine closely. How does it look, feel, smell, taste? What is unique about your orange? Take the orange apart and examine and discuss the colors, patterns, and textures. Eat the orange.

LISTENING Have students sit (or lie) silently, listening first for sounds that are close, then for sounds that are far. “What do the sounds remind you of?” As an option, students can describe the sounds with their hands.

SMELLING Small bottles are prepared in advance with familiar scents, such as vanilla extract, Vicks VapoRub®, peanut butter, used coffee grounds,

cinnamon, cloves, rubbing alcohol, lipstick, and so on. In small groups the scents are passed around, and students discuss the memories that are stimulated by each smell. The smells also can be imagined; for example, how does the smell of warm apple sauce and cinnamon make you feel?

TOUCHING Have students touch many surfaces, concentrating fully on the feel. Use strange objects (e.g., a piece of coral) and familiar ones (e.g., a piece of tree bark). The objects should be in paper sacks, so that they are kept hidden from view.

Pantomime

Many of the movement and sensory exercises cited thus far include an element of pantomime (e.g., circus, people machines, tug-of-war, creative locomotion). With more “serious” pantomime, students create situations with physical movements, facial expressions, and even eye movements as they perform in an imaginary environment. With encouragement, students can use their faces, hands, and bodies to express sadness, glee, love, fear, surprise, and so on. Pantomime activities can be relatively short term, or lengthier miniplays without lines.

Following are some pantomime activities:

INVISIBLE TRUNK About 6 to 10 students form a circle. In turn, each person lifts the lid on an invisible trunk, removes something, does something with it, then puts it back in the trunk and closes the lid. Others spontaneously guess the object and activity. The action may go around the circle two or three times.

INVISIBLE BALLS An invisible ball is passed from person to person several times around a small circle (or up and down each row in a class). As each person receives the ball, it changes size, shape, weight, smell, and so forth.

MAGIC STICK Taking turns, students improvise with a wooden dowel or other stick—or any other object, for that matter. They can “pass” if temporarily stumped.

INSIDE-OUT Children become fish in a tank or zoo animals in cages. Others look in.

ANIMAL PANTOMIMES Each child moves to the center of the circle to pantomime his or her animal. Others guess the animal. For variety, two or three animals can act out a simple plot—for example, a cat sneaking up on a mouse; a bear looking for honey, but finding bees; a bull spotting some picnickers; a squirrel and a bluejay both trying to get the same piece of bread; a rabbit and a turtle preparing for a short race. Students can think of more.

CREATING AN ENVIRONMENT This exercise is much like an add-on people machine. Students think of and create an environment, such as a bowling alley, people fishing from a boat, a playground, ballet class, fish and seaweed in an aquarium, gym class, football team warming up, farm animals, a car wash, a dentist’s office with waiting room, and so on. The class can think of more.

MISCELLANEOUS PANTOMIME Many brief sketches can teach students to pay high attention to movements and expressions. Some examples are a jolly McDonald’s cashier waiting on two or three impatient customers, a fussy person trying on hats or shoes, scared mountain climbers unable to go up or down, the Three Stooges hanging wallpaper or performing heart surgery, a grouchy cab driver in rush-hour traffic taking a worried person to the airport, and the President of the United States being locked out of the official airplane.

Playmaking

Playmaking involves acting out stories and scenes without a script. To improve the expressiveness of movements and gestures, a sketch may be practiced without lines—that is, in pantomime. With one straightforward strategy, students are given a simple scene (plot), characters are explained, and then students improvise the action.

Way (1967) suggested that miniplays need not be silly. They can involve, for example, miners working against time to reinforce a mine about to cave in; slow-moving astronauts assembling something in space; toy-shop toys or museum displays coming alive at the stroke of midnight; Californians experiencing an earthquake; or witches and goblins cooking up a magic brew with improvised, important ingredients. Historical episodes, folklore, mythology,

fairy tales, nursery rhymes, and animal stories also present possibilities: the Boston Tea Party, Columbus discovering America, Goldilocks and the Three Bears, Cinderella, and others.

A more structured playmaking strategy might run as follows: After a few warm-up exercises, the leader tells a story. Then leader and students review the sequence of events—what happened first? second? third? The group then discusses characterization, considering physical, emotional, and intellectual qualities (limping, slow, quick-stepping, nervous, angry, happy, excited, calm, conceited, dull-witted, scientific-minded). The play typically is broken down and worked out scene by scene. The group may first act out a scene without dialogue in order to explore movements and expressions. After improvements, it is replayed with improvised dialogue. A given scene may be replayed many times, with different students trying different roles. Again, ideas may be found in historical or mythological material, or in children's books, nursery rhymes, or other stories. Also, students can brainstorm plots and ideas.

Carelli (1981) noted that, when playmaking is with gifted students, the students may select the

theme; assign responsibilities; plan and implement the activities, including researching the particular historical or mythological event; and evaluate both the process and the final product.

Creative dramatics virtually always elicits excited feelings of creativeness—it's not every day that students experience being blind or pretend to be a robot, a bird in a cuckoo clock, or a squeaking gear in a people machine that does nothing. They are given a perfectly logical reason to stretch their imaginations and humor. The activities may be used with any age group, from an elementary school pullout program, to a high school drama class, to a college creativity class.

In Davis's former college creativity class—with chairs out of the way in a classroom or, sometimes, in a lecture hall with 80 students—a progressively more creative and rousing session typically included holding up the ceiling and biggest thing, smallest thing (warmups); imaginary tug-of-war; and some combination of circles, mirrors, trust walk, invisible box, and invisible balls; and, always, people machines (group strategy *and* add-on strategy—usually a pin-ball machine). A creative experience was had by all.

Summary

Creative development is a central G/T topic. In lifetime achievement, high-IQ students are outperformed by bright students who also are creative. Descriptions of the construct of creativity vary considerably.

Taylor describes five levels of creativity: (1) intuitive, (2) technical, (3) inventive, (4) innovative, and (5) genius. Creative underachievers often remain at the first level of expression for fear that technical skills will interfere with their uniqueness. Csikszentmihalyi referred to "big C" and "little c" to differentiate levels of creativity. Csikszentmihalyi's "little c" people are more likely to resemble those described by Maslow as self-actualized.

Creative students tend to be independent, risk-taking, energetic, curious, witty, idealistic, artistic, and attracted to the mysterious and complex; also, they need alone time. Their attitudes include (1) naivete, (2) self-discipline, (3) risk-taking, and (4) group trust.

Negative traits include stubbornness, resistance to domination, uncooperativeness, cynicism, tendencies to

question rules, uncommunicativeness, and others. These may be troublesome to teachers.

Some high-energy, bright, and creative students are incorrectly classified as having ADHD, although some gifted students do have ADHD.

Many eminent persons—especially in the arts and among writers—have or have had depression, Manic-Depressive Disorder, or other mental health problems. Such problems apparently aid imagination and unconventionality. Perhaps the theory that best explains the plethora of mental health problems among creatively eminent persons is Dabrowski's Theory of Positive Disintegration (TPD), according to which coping with negative emotions stimulates people to achieve more advanced emotional development. The paradoxical and complex intensities of creative persons described by Csikszentmihalyi also give insight as to why creative people may not always seem mentally healthy.

Torrance suggested a number of characteristics of creativeness in the kinesthetic and auditory areas—for

example, skillful movement and talent in dance and music. Some characteristics of creativity are domain specific. The poet is inspired by language; the scientist, by a telescope.

In addition to the popular fluency, flexibility, originality, and elaboration, important creative abilities include, for example, a syndrome that encompasses problem finding, problem sensitivity, and problem defining, along with abilities pertaining to visualization, analogical thinking, evaluation, intuition, resisting premature closure, logical thinking, seeing structure in chaos, avoiding mental sets, and making good decisions.

Many thinking skills (e.g., planning, prioritizing, discovering relationships, making inferences) and creative personality traits (e.g., humor, curiosity, independence, risk taking) may be considered creative abilities.

The creative process may be viewed, first, as stages in creative problem solving. Wallas's four stages are preparation, incubation, illumination, and verification. Cropley added three more stages of information, communication, and validation.

Csikszentmihalyi described a systems model of creativity, which always requires the interactions of the domain, the field, and the creator.

The Creative Problem Solving model includes fact finding, problem finding, idea finding, solution finding

(idea evaluation), and acceptance finding (idea implementation), as well as, sometimes, a preliminary stage of "mess finding" (identifying a problem). Solution finding may involve an evaluation matrix. Describing acceptance finding, Treffinger noted "assisters" and "resisters"—people, methods, or resources that affect progress. He also described "hits" and "hot spots," groups of good ideas. Parnes advised that, if helpful, the five steps may be used in any order. The CPS model has been proven effective with marginalized adolescent populations.

Piirto's creative process includes seven "I" stages; Inspiration, Imagery, Imagination, Intuition, Insight, Incubation, and Improvisation.

The creative process also may be viewed as a change in perception—seeing new idea combinations, new relationships, new meanings, new implications, and new applications. The cause of, or the reason for, this sudden change in perception is not well understood.

Creative dramatics seeks to strengthen divergent thinking, imagination, problem solving, sensory awareness, discovery and control of emotions and of the physical self, humor, self-confidence, and empathic understanding. Five categories of activities include warm-ups, movement exercises, sensory and body awareness, pantomime, and playmaking.