Future Problem Solving
How to Engage
Our Most Able Boys

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CHRIST CHURCH GRAMMAR SCHOOL

Definitions

- Gifted students:

  - are those who are identified in the **top 10%** of the population.

  - Gagné defines giftedness as the possession of natural abilities or aptitudes at levels significantly beyond what might be expected for one's age, in any domain of human ability.

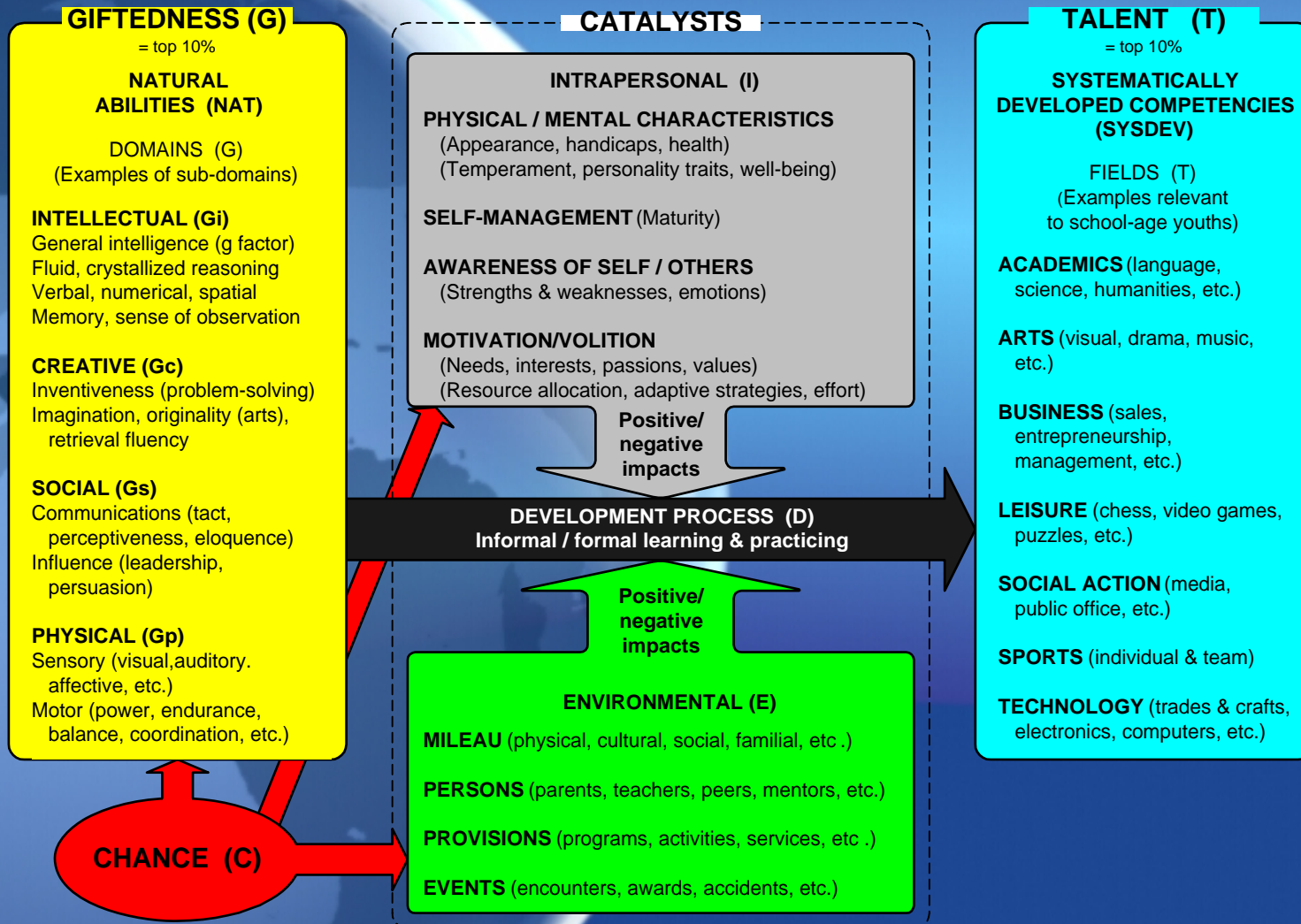   **In simple terms = outstanding ability or potential.**

- Talented students:

  – **While giftedness equates with high ability, talent equates with high achievement.**

  – Gagné defines talent as achievement or performance at a level significantly beyond what might be expected at a given age.

    In simple terms = outstanding achievement

Gagné's Differentiated Model of Giftedness and Talent (DMGT)

GIFTEDNESS (G)
= top 10%

NATURAL ABILITIES (NAT)

DOMAINS (G)
(Examples of sub-domains)

INTELLECTUAL (Gi)
General intelligence (g factor)
Fluid, crystallized reasoning
Verbal, numerical, spatial
Memory, sense of observation

CREATIVE (Gc)
Inventiveness (problem-solving)
Imagination, originality (arts),
retrieval fluency

SOCIAL (Gs)
Communications (tact,
perceptiveness, eloquence)
Influence (leadership,
persuasion)

PHYSICAL (Gp)
Sensory (visual,auditory.
affective, etc.)
Motor (power, endurance,
balance, coordination, etc.)

CATALYSTS

INTRAPERSONAL (I)

PHYSICAL / MENTAL CHARACTERISTICS
(Appearance, handicaps, health)
(Temperament, personality traits, well-being)

SELF-MANAGEMENT (Maturity)

AWARENESS OF SELF / OTHERS
(Strengths & weaknesses, emotions)

MOTIVATION/VOLITION
(Needs, interests, passions, values)
(Resource allocation, adaptive strategies, effort)

Positive/ negative impacts

DEVELOPMENT PROCESS (D)
Informal / formal learning & practicing

Positive/ negative impacts

ENVIRONMENTAL (E)

MILEAU (physical, cultural, social, familial, etc .)

PERSONS (parents, teachers, peers, mentors, etc.)

PROVISIONS (programs, activities, services, etc .)

EVENTS (encounters, awards, accidents, etc.)

CHANCE (C)

TALENT   (T)
= top 10%

SYSTEMATICALLY DEVELOPED COMPETENCIES (SYSDEV)

FIELDS (T)
(Examples relevant
to school-age youths)

ACADEMICS (language,
science, humanities, etc.)

ARTS (visual, drama, music,
etc.)

BUSINESS (sales,
entrepreneurship,
management, etc.)

LEISURE (chess, video games,
puzzles, etc.)

SOCIAL ACTION (media,
public office, etc.)

SPORTS (individual & team)

TECHNOLOGY (trades & crafts,
electronics, computers, etc.)

Identification

- Psychometric
- Aptitude Testing
- Standardised Achievement Testing
- Teacher-made Testing
- Off-Level Testing
- Parent Nominations
- Teacher Nominations

Provisions and Strategies

- Pre-testing
- Compacting
- Tiered Assignments
- Accelerated Pace
- Ability Grouping
- Independent Research Tasks
- Negotiated Learning Contracts
- Learning Centres

Differentiation

- Definition

  Differentiated curriculum addresses the different learning styles and rates of learning of students in both mixed ability and self-contained gifted classrooms.

  (B MacLeod, 2004)

Models of Differentiation

- Bloom's Taxonomy

- Kaplan Model

- Williams' Model

- Maker Model

Maker Model

- Content Modification

- Process Modification

- Product Modification

- Learning Environment Modification

(Maker, 1982)

True Gifted Program

- Would everyone be able to do it?

- Could everyone participate?

- Should all students succeed?

    – (Harry Passow, 1988)

Challenging Your Thinking

- US Study showed that 50% of curriculum could be removed for gifted students (K Rogers, 2001)
- All children are not gifted
- There are up to six year levels in a typical Year 7 class (F Gagne, 2006)
- Not all teachers are able to teach gifted students

Challenging Your Thinking

- It is not elitist to cater for gifted students
- Gifted students cannot do it all by themselves
- Learning rates differ dramatically
- Grouping is an effective provision and is backed up by a massive amount of research (M Gross, 2007 & K Rogers, 2006)

Levels of Giftedness

- Profoundly   1/1000000   IQ180+
- Extremely   1/100000   IQ165
- Exceptionally   1/10000   IQ155
- Highly   1/1000   IQ145
- Moderately   1/100   IQ135
- Mildly   1/10   IQ125

HOTS not MOTS

- How do you make sure that students are working in what Vygotsky called the zone of proximal of development?

Future Problem Solving Program

Opening the Doors

It isn't that they can't see the solution.

It's that they can't see the problem.

G.K. Chesterton

FPS in Australia

- In existence internationally since 1974
- The first non-US affiliate in 1988
- Largely volunteer national committee of full-time, practising educators
- FPS reaches approximately 6000 students nationally and over 250 000 internationally

History of
Future Problem Solving

- 1953:   Alex Osborn (*Applied Imaginations)*
- 1967:   Sidney Parnes (*Creative Problem Solving)*
- 1974:   E. Paul Torrance (*Future Problem Solving)*
- 1979 – 85:   Expansion to most states of **USA**
- 1985:   International Conference established
- 1988:   **Australian** affiliate program begins (inc New Zealand)
- 1994:   **New Zealand** becomes affiliate in own right
- 1998:   Teams from **Singapore** & **Hong Kong** first participate in Australian Program
- 1999:   Teams from **Malaysia** compete in FPSP Australia
- 2001:   Malaysia becomes first country in SE Asia to compete at International

                            Conference
- 2002:   **Korea** accepted as affiliate program in own right
- 2004:   Best team from Hong Kong competes in Australian Final
- 2005:   Teams from Singapore, Hong Kong and Malaysia compete in Australian Final
- 2006:   Teams from Singapore, Hong Kong and Malaysia all participate in International Conference
- 2007:   **South Africa** joins Australian Program   (N Cassinader, 2007)

The Goals of
Future Problem Solving

- Extension and challenge for gifted & talented students

- Life skills

- Academic goals

Life Skills from Future Problem Solving

Helping young people develop the skills necessary to live with confidence in a changing world

- Thinking Clearly
- Thinking Creatively
- Thinking for the Future
- Using Research Effectively
- Working in Teams
- Developing Communication Skills
- Working with Self-direction
- Coping with Ambiguity

Academnic Goals of Future Problem Solving

Enhancing Students' Learning in:

- **Higher order thinking**
- **Problem-based learning**
- **Reflection and thought**
- **Self and Group Organisation**
- **Reading & writing accurately and efficiently**
- **Non-verbal communication**
- **Intellectual rigour**
- **Developing initiative & enterprise**
- **Adaptability**
- **Coping with change**

The Future Problem Solving Thinking Process

1. Generate **Problems** & **Challenges**

2. Select an **Underlying Problem**

3. Generate **Solution Ideas**

4. Select **Criteria** to Evaluate Solutions

5. **Apply Criteria** to Evaluate Solutions

6. Develop a **Plan of Action** based on best solution

Components of the Future Problem Solving Program

1. **Regular Booklet Program**
   a. groups of four (4)
   b. individual participation
   c. non-competitive
   d. non-school based

2. **Scenario Writing**

3. **Community Problem Solving**
   a. team
   b. individual

4. **Curricular Division**
   a. booklet
   b. Action-based
   Problem Solving (AbPS**)**

5. **School Curriculum**

Primary   Grades P - 5
Junior   Grades 6 - 7
Middle   Grades 8 - 10
Senior   Grades 11 – 12
Western Australian figures

red : competitive
white: non-competitive
green: curriculum based

Topics in FPS

- Set internationally after global input
- Humanities, sciences, business and sociological issues
- Five topics per year

Past Topics

- Cultural Prejudice
- Homelessness
- Environmental Law
- Prejudice
- Privacy
- Water
- Mental Health
- Nanotechnology
- Immigrants
- Terrorism / Security

- United Nations
- Natural Disasters
- Freedom
- Women in the Workplace
- Climate Change
- Oceanic Species
- DNA Identification
- Antarctica
- Robotics

Topics for
2009 Booklet Program

- Olympic Games   (Practice: 3 steps)

- Cyber Conflict   (Practice: 6 steps)

- Space Junk   (Qualifying Problem)

- Counterfeit Economy   (Australian Final)

- Pandemic   (International Final)

How it can be Delivered

- Extra curricula, e.g. Club

- In class – differentiated unit

- Pull Out Program – 'Instead of' Idea

- Elective – subject in its own right

Positives for Talented Boys

- Think more creatively
- Active interest in future
- Improve oral and written skills
- Solve problems with a structured six-step process
- Work co-operatively with like minded learners
- Learn about complex societal issues
- Develop research skills & think analytically

Questions and Discussion