KEY TIPS
FOR COACHES & STUDENTS
GLOBAL ISSUES PROBLEM SOLVING 2018-19

Future Problem Solving Program International (FPSPI) is a challenging and rewarding program. Proficiency in Global Issues Problem Solving (GIPS) is a result of understanding the creative problem solving model and mastering the generating and focusing tools used in problem solving.

- The FPSPI **Coach's Handbook** offers a comprehensive overview of the problem solving model used in GIPS and suggests activities to introduce generating and focusing problem solving tools.
- The official **Evaluation Guidelines** are published annually, and represent the most current standards for competition. They are provided for all participants from Affiliate Directors, or available for download at www.fpspimart.org.

Contact Future Problem Solving Program International or visit www.fpspimart.org for information on these and other materials related to Global Issues Problem Solving.

BENEFITS OF FPSPI

Foster 21st Century Learning Skills with Future Problem Solving - Future Problem Solving (FPS) teaches students how to think, not what to think. The diverse components offered by Future Problem Solving address the need for problem solving within the curriculum in order for students to prepare effectively for the future in front of them. FPS can also be integrated into all curriculum areas, especially language arts, science, and social studies. Participation in the program strongly supports the development of 21st Century Skills.

Students increase their global awareness and explore content related to business & economics, science & technology, and society & politics through the study of a series of current issues projected into the future. As students focus on what is happening in the world today (research) and what might happen in the future (foresight), learning is dynamic and empowering. Under the guidance of a coach, students evaluate, analyze and synthesize information from a wide range of perspectives.

Creativity and Innovation - Problem solving situations are set in the future to encourage inventive thinking. Students learn to look at situations from a variety of perspectives. Creativity is essential as they generate Challenges and develop multiple ideas for Solutions to pressing problems.

Critical Thinking and Problem Solving Students use analysis to gain an understanding of issues in today's world and to comprehend the significant aspects of complex situations set in the future.

Problem solving skills are applied as they focus on possible Solutions and develop Action Plans for those situations.

Communication and Collaboration
Students collaborate in teams while learning about the issues and while applying their problem solving skills. Clear and articulate communication is developed while working with a team, an essential skill for our future leaders.

Preparation

It is important to prepare for Global Issues Problem Solving by developing solid background knowledge on the current topic. Having a solid foundation of the existing events within a topic and the vocabulary used to discuss that topic is extremely advantageous to problem solvers when they read the Future Scene.

- Books, news magazines, futuristic periodicals, and other helpful information can be found in the school library or on the internet. The FPSPI Facebook page regularly posts topic related articles and videos. Check us out at www.facebook.com/fpspi/

- The FPSPI **Readings, Research, and Resources (RR&R)** is an excellent source for initiating research. It provides research strategies and content for use by the new and experienced coach with students of all ages.
  - **For each of the annual topics, the RR&R includes:**
    - Terms and Definitions to establish early understanding of topics
    - Overview of major trends to look toward the future
    - Questions for Discussion to develop analytical skills
    - Themes and Concepts to guide student research
    - 50 article links and summaries

- Online resources such as webinars and MOOCs designed for student learners can provide engaging ways to explore new topics.

- The FPSPI **Topic Activity Units** engage students in a wide variety of instructional activities incorporating topic research with the six-Step process.
  - **For each of the annual topics, the Topic Activity Units includes:**
    - Lesson plans developed from best practices to integrate critical thinking.
    - Each topic can be used as a standalone unit of study, or singular activities may be used as desired for particular Steps within the process.
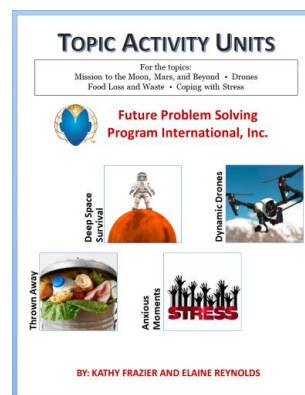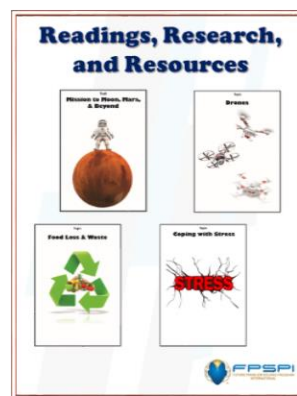
- Field trips, real life experiences, and local experts are excellent means to provide research opportunities. Local industry associations and service organizations often have individuals prepared and interested in speaking on a variety of subjects.

Caution: We strongly advise coaches to review their educational organization's policies on appropriate content, and to screen any materials before making them available to students.

The Future Scene

Student work must relate to the Future Scene, a hypothetical "what-if" scenario based on current research projected 20-30 years into the future. The Future Scene operates as the "reality" within which participant work must take place. Future Scenes revolve around an imaginary, yet realistic, futuristic scenario. The imagined and futuristic elements of the Future Scene allow FPSPI to use its own creativity in producing the scenarios. Global Issues Problem Solving intends for students to build upon the creative elements of the Future Scene and showcase their own creativity.

Early in the competitive season, Future Scenes are open-ended and allow students to develop and enhance their skills. Future Scenes become more difficult as the FPS season progresses. There are two types of Future Scenes utilized during the FPSPI season. Practice Problem #1 and Practice Problem #2 are non-competitive. These Future Scenes are often examined by students over time, with instruction and guidance from their coach. For these problems, emphasis is placed on learning the problem solving process, and thus evaluators often provide extensive feedback to promote effective use of the process. The Qualifying Problem, Affiliate Final/Bowl and the International Conference are competitive, and thus less emphasis is placed on teaching the process and more on the application of the process.

For competitive Global Issues Problem Solving competitions, students do not see the Future Scene in advance. Rather they receive the Future Scene in a proctored setting limiting access to resources and time. In an effort to get students to think and to help evaluators distinguish teams/individuals who memorize from those who think, Future Scenes concentrate on only a portion of the topic. Not all of the student's research and information is applicable to the Future Scene, and the students must utilize appropriate information relevant to their work in the GIPS booklet.

Key Tips for reading a Future Scene
- Identify the Future Scene parameters (topic, place, and time).
- Relate the Future Scene to the research. What has changed? What is the same?
- Identify the vocabulary, new products, and trends specific to the Future Scene.
- Consider pertinent questions:
  - What is the charge?
  - Who is Challenged, involved, or affected within the Future Scene?

Note about Examples:

- The examples used in this document are based on the 2014 IC Future Scene, on the topic of SPACE, which can be found at the end of this document.

- Gray text boxes such as this one indicate examples throughout this document.

STEP 1
Identify Challenges

The key objective in Step 1 is to identify Challenges based on the Future Scene. A Challenge is an issue, concern, or problem that *may* need attention or consideration (points of importance). A Challenge is a logical cause or effect of the situations in the Future Scene that may have a chance of occurring. Flexibility in thinking is demonstrated by exploring Challenges from different perspectives or categories. Knowledge of the topic should be used to determine Challenges from the situations within the Future Scene. The goal is 16 well-written Challenges. (8 for individuals)

ESSENTIALS

1. Student work must relate to the Future Scene as stated. Though present research trends may point in several directions, students are required to problem solve within the boundaries of the given situation.
2. Step 1 Challenges are written as statements, not questions.
3. Challenges are stated in terms of *possibility*, using non-absolute terms such as may, might, could, etc.
   - Absolute terms that indicate an idea *"will be a challenge"* deny an important element of projecting into the future as it is impossible to know what will or will not occur in the future.
   - We can only make educated guesses as to possible occurrences based on an investigation of the resources.
   - Using "will" instead of "may" does not negate a Challenge, but impacts the Clarity score.
4. A clearly written Challenge demonstrates logical cause-effect reasoning and tells what the Challenge is, why it is a Challenge, and how it relates to the Future Scene.
5. Students should demonstrate flexibility in their thinking and explore Challenges from different perspectives or categories.
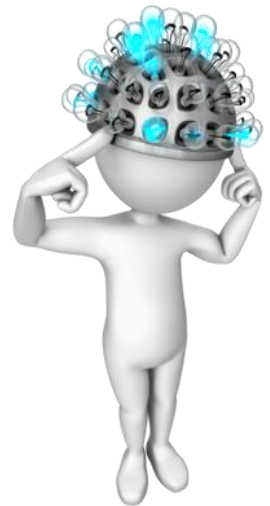
> To earn maximum Fluency and Clarity scores in Step 1, students need to explain:
> - *what* the Challenge is,
> - *why* it is a Challenge, and
> - *how* it logically relates to the Future Scene.

Students often fail to earn high scores in Fluency because information explaining a Challenge statement is not fully explained. Clearly stating each Challenge helps an evaluator understand the intent of a Challenge. Consider the examples below. Challenges written at different levels of expertise, as shown in the examples, may be awarded credit. Each of these Challenge statements clearly tell *what* the Challenge is, *why* it is a Challenge, and *how it logically relates to the Future Scene.*

Examples of "Yes" Challenges
A. *People on Titania may not be able to communicate with Earth.*
   o Cause/effect relationship implied
B. *Since Titania is the farthest settlement from Earth, People on Titania may not be able to regularly communicate with Earth due to technical problems.*
   o Explained what the Challenge was and why it was a Challenge
C. *Since Titania is the farthest settlement from Earth, people on Titania may not be able to communicate with friends and family on Earth due to technical problems causing them psychological and emotional stress.*
   o More insightful information added
D. *Humans can suffer emotionally, psychologically, and physically from long separations from loved ones. Since Titania is the farthest settlement from Earth, people on Titania may not be able to communicate with friends and family on Earth causing them psychological and emotional stress which could lead to poor job performance.*
   o Relevant research added
E. *The Oberon Corporation is planning to send 600 people to live on Titania to mine Helium-3. People living on Titania might not be able to get help from Earth if there is an emergency resulting in death, injury, or irreparable damage to equipment.*
   o "Expertly" written Challenge with high clarity

Sometimes the Challenge idea is not developed enough to receive credit. Consider the examples below that omit important information, and would not receive credit.

Examples of unsuccessful Challenges
A. *People might not be able to communicate.*
   o The Challenge statement identifies a Challenge (inability to communicate). However, it does not tell why it is a Challenge, and how it logically relates to the Future Scene.
B. *Thousands of people live semi-permanently on the station.*
   o This is a statement of a Future Scene fact. As a Challenge statement, it does not tell *what* the Challenge is or *why* it is a Challenge. We can infer different Challenges from this fact; however, students must explain *why* this is a Challenge *logically related to the Future Scene*.
C. *People on Titania could SKYPE or Face Time to Earth every week.*
   o This statement proposes a solution rather than identifying a Challenge.

HELPFUL HINTS

<u>Fluency and flexibility</u> can be expanded by the use of generating tools such as brainstorming, forced relationships, and the category list. Not all categories will apply to every topic and Future Scene. There is an illustrated category list designed for reproduction available at the end of this document.

1. Arts & Aesthetics
2. Basic Needs
3. Business & Commerce
4. Communication
5. Defense
6. Economics
7. Education
8. Environment
9. Ethics & Religion
10. Government & Politics
11. Law & Justice
12. Miscellaneous
13. Physical Health
14. Psychological Health
15. Recreation
16. Social Relationships
17. Technology
18. Transportation

<u>Terms and concepts from research</u> can help to explain and relate the Challenge statements to the Future Scene. Challenges should include findings from the research, as well as students' own thoughts on the topic based on their analysis of the research or the Future Scene. Citing the source of information is acceptable, but not required and is often time consuming.

<u>Cause and effect</u> is the relationship between two things when one thing makes something else happen. A Challenge embodies cause-effect reasoning when looking at causes whose effects can be seen in the Future Scene or looking at the Future Scene details as causes and determining what effects may occur. There may be multiple causes for a single effect and multiple effects from a single cause. A chain of two effects is usually sufficient for a Challenge. The relationships between causes and effects must be logical.

Common cause-effect signal words			
Accordingly	Consequently	If...then	So that
As a result	Due to	Nevertheless	Therefore
Because	For this reason	Since	Thus

<u>If a Challenge or concern is mentioned in the Future Scene</u>, it can be included in the student written Challenges provided that their Challenge <u>elaborates</u> on what is stated in the Future Scene to offer greater insight as to **why** something is a Challenge.
- Students must develop the fact/concern, extending it to a new level.
- Restating a fact/concern from the Future Scene is not enough to earn credit as a Challenge.

<u>Quality is sometimes more important than quantity</u>. While the goal is to generate and write16 well-stated Challenges (8 for individuals), it is up to the students to decide if fewer key Challenges that clearly tell what the Challenge is, why it is a Challenge, and how it relates to the Future Scene are better than 16 (8) Challenges that only partially address the what, why, and how.

Extremes should be avoided. Students sometimes hit the extreme when explaining consequences – proclaiming widespread death, economic ruin, or the end of the world as we know it. Usually many intermediate consequences are possible before such major disasters would overtake us. For example, "cramped quarters in could lead to stress and tension between people" is a reasonable consequence. It is an extreme measure to assert that people might start fighting and everyone would kill each other.

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What an evaluator looks for in Step 1

Fluency – Challenges that are logical cause/effect statements of the situations in the Future Scene.

Flexibility – A variety of ideas presented in Challenges as demonstrated by the use of multiple categories.

Clarity – Challenges that clearly describe what the concern is, why it is a concern, and how it relates to the Future Scene.

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STEP 2
Select and Underlying Problem

An Underlying Problem identifies a goal based on addressing one or more Challenges within the Future Scene. An excellent Underlying Problem has a narrowed focus, addresses a **significant** issue from the Future Scene through the Key Verb Phrase, and identifies a positive outcome (Purpose) of accomplishing the KVP.

ESSENTIALS

1. An Underlying Problem is stated as one question and contains four basic components.

- ***Condition Phrase***: The Condition Phrase is a lead-in fact or logical extension from the Future Scene or research related to the Future Scene that is the basis for the issue chosen for the Key Verb Phrase. The Condition Phrase should provide a connection to the Future Scene and the rationale. The Condition Phrase may explicitly or implicitly refer to one Challenge or a group of Challenges, but is not itself a Challenge.

> **Example Condition Phrase:**
> *Due to the fact that Oberon may hold a monopoly on Helium-3 collection in space, possibly causing an uneven distribution of fusion energy on Earth, ...*

- ***Stem + Key Verb Phrase***: Together, the stem ("How might we" or "In what ways might we") and the Key Verb Phrase, a single action verb or verb phrase with its object, indicate the primary action that addresses an issue from the Future Scene.

> **Example Stem + Key Verb Phrase**
> *...how might we diversify access to Helium-3 collecting ...*

Words should be chosen carefully so the goals stated in the KVP and Purpose are clear and measurable. Phrases such as *improve the quality of life* or *provide a successful life* have different meanings to each evaluator. The evaluator may have a difficult time determining if a vague Purpose can be achieved. All Solution ideas in Step 3 must address the goal of the Key Verb Phrase.

- **Purpose:** The Purpose specifies an optimal direction or outcome of the Key Verb Phrase. The Purpose should be singular and give further information about a desired result that should flow from accomplishing the action goal, and it is not a repetition of the Condition Phrase or KVP. The Purpose usually begins with "so," "so that," or "in order to." The Purpose should be one that clearly flows from achieving the action goal stated in the Key Verb Phrase. It is not appropriate to rephrase the KVP.

> **Example Purpose**
> ...*so that citizens of all countries have access to clean fusion energy in 2063 and beyond?*

- **Future Scene Parameters:** The Future Scene parameters place the Underlying Problem within the confines of the Future Scene. These parameters include <u>topic</u> (major focus of Future Scene), <u>place</u> (geographic location), and <u>time</u> (date from Future Scene, reasonable related dates). The parameters may be placed anywhere in the Underlying Problem.

> **Example's Parameters**
> Topic – *space*
> Place – *space, deep space, Titania, Earth's moon,*
> Time – *2063*

2. The issue identified in the Underlying Problem should be a smaller part of the entire Future Scene; it should narrow the Future Scene without trivializing any part of it. The issue must be derived from a Challenge or cluster of Challenges generated in Step 1. Excellent Underlying Problems identify a significant area of concern of the Future Scene. A lower score is given if the Challenge identified is too broad or too narrow. Weaker Underlying Problems employ a multiple Key Verb Phrase or a multiple Purpose.

> **Example Underlying Problem**
> *Due to the fact that Oberon may hold a monopoly on Helium-3 collection in <u>space</u>, possibly causing an uneven distribution of fusion energy on Earth, how might we diversify access to Helium-3 collection on <u>Titania</u> so that citizens of all countries on Earth have access to clean fusion energy in <u>2063</u> and beyond?* (parameters underlined)

Effective problem solving means a large issue or Challenge is broken down into smaller, more manageable Challenges. In other words, it would be very hard to solve all the Challenges of Oberon or Helium-3 at once. Instead, it would be easier and more effective to attack one important Challenge or one category of Challenges at a time. Solutions to the Underlying Problem will be generated in Step 3. The Underlying Problem should be an important or significant problem area within the Future Scene. It should be narrow enough to focus attention on a defined area of concern and broad enough to generate many different Solution ideas.

3. Selection of the Underlying Problem is a critical Step in the FPS process. When discussing which of the many and varied Step 1 Challenges and areas of concern to address in Step 2, teams/individuals should ask themselves these questions, referred to as the *Four I's* which represent areas for students to consider as they thoughtfully make their decision about the Underlying Problem.

> *Impact* - Which area of concern, if solved, would have the greatest impact on the Future Scene?
> *Influence* - Which area of concern can the team/individual have the most influence on because of their knowledge of the topic?
> *Interest* - Which area of concern generates the most interest and enthusiasm?
> *Imagination* - Which area of concern seems most likely to inspire student's imaginations so they can come up with creative, futuristic Solution ideas?

**Key Tips for selecting an Underlying Problem**

- A Challenge that is an underlying *cause* of the Future Scene makes an excellent Underlying Problem.
- Address an area or category of concern.
- Several related Challenges in Step 1 may be compiled into an important Underlying Problem. A compilation, or synthesis, can be seen as more than one specific Challenge but less than an entire category of Challenges, or it can be a compilation of related Challenges that address several different categories.
- Multiple **unrelated** ideas should not be included in the Underlying Problem.

HELPFUL HINTS

The Underlying Problem is the most important Step in problem solving because the quality of all subsequent Steps relies on an important and well-stated Underlying Problem. Many aspects must be considered in the construction of a successful Underlying Problem. Below are common concerns found in weak Underlying Problems.

UP Mistakes to Avoid	
Multiple verbs, phrases or objects	- A KVP should contain a single verb or verb phrase with a single object. - Avoid using the words *and*, *or,* and *while* in your Key Verb Phrase to reduce the chance of a multiple verb or multiple objects. - Points will be reduced for the KVP in each of these cases. - Focus score will be reduced, and evaluators will use only the first verb/verb phrase or object when scoring for Adequacy. - To be scored as relevant in Step 3, Solution ideas must address or support both verbs or objects – which is extremely difficult.

UP Mistakes to Avoid	
Absolute verb**s**	• Verbs such as stop, prevent, eliminate, etc. are not easily addressed in Step 3 Solutions. • An absolute verb *may* unnecessarily narrow the focus, thus reducing points for Focus. • An absolute verb *may* be appropriate, depending on the intent defined, thus NOT reducing points for focus. The context of the Future Scene will help the evaluator determine if the absolute verb is appropriate or too narrow.
Restatements of the Future Scene	• A restatement is a KVP and Purpose that addresses the entire Future Scene in a very general way which is a critical error in the creative problem solving process. The KVP and Purpose should be a narrowing of the entire Future Scene to one significant area of concern. • Words from the Future Scene charge can be used in the UP, but if the charge is very broad the resulting Key Verb Phrase and Purpose could be a restatement. • Restatements receive a score of 1 for Focus and Adequacy. Scores may also be lower in Step 6 (Effectiveness and Impact) and in Overall (Creative Strength).
Broadening beyond the facts stated in the Future Scene	• A UP that broadens the charge of the Future Scene is one that takes a tangent to the Future Scene and applies it to their UP. This is usually a completely different line of action sometimes related to research. • A score of 1 is given for Focus and a score of 1 is given for Adequacy when broadening occurs. • The Future Scene parameters of topic, place, and time are used when scoring Step 3 Solution Ideas if the parameters included in the UP are not included or are changed.
Unrelated to the Future Scene	• An unrelated UP ignores the facts of the Future Scene, perhaps concentrating on some aspect of research of the topic. • When the Future Scene is ignored, a score of 1 is given for Focus and Adequacy. • The Future Scene parameters of topic, place, and time are used when scoring Step 3 Solution Ideas, causing scores to be lower in Step 6 – (Effectiveness and Impact) and in Overall (Creative Strength).
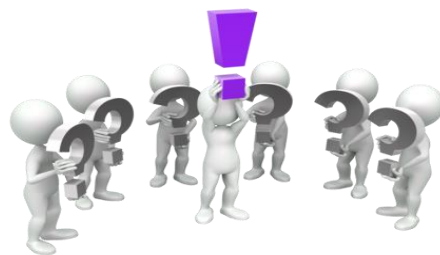
UP Mistakes to Avoid	
Missing purpose	• Leaving out the Purpose affects scores in both Steps 2 and 3. • A score of 0 is given for Purpose, and scores of 1-3 are given for Focus and Adequacy. • A Purpose that only repeats the KVP is treated as though it were not present. • Evaluators will impose a Purpose that seems logical to the Future Scene and the KVP that is used when scoring Solutions for non-competitive rounds ONLY. • In competitive situations such as the Affiliate Bowl or the International Conference, a booklet with no Purpose for the Underlying Problem has a very hard time advancing to top rounds of evaluation.

What an evaluator looks for in Step 2

Completeness – Are all the correct components (Condition Phrase, KVP, Purpose, Parameters) present and appropriate?

Focus – The issue identified in the Underlying Problem should be a smaller part of the entire Future Scene; it should narrow the Future Scene without trivializing any part of it.

Adequacy – The Underlying Problem should be of major importance in relation to other Challenges affecting the Future Scene. Future Scenes commonly identify a specific mission, charge, or area of concern.

STEP 3
Produce Solution Ideas

The key objective in Step 3 is to produce many varied and creative Solution ideas to solve the Underlying Problem. A Solution idea, if relevant, addresses the Key Verb Phrase and supports the Purpose, either explicitly or implicitly and does not contradict the Future Scene parameters of topic, place, and time. Flexibility in thinking is demonstrated by suggesting ideas from different perspectives or categories. The team's goal is 16 (8 for individuals) elaborated Solution ideas.

ESSENTIALS

1. Solution ideas must address, or have a relationship to, the Key Verb Phrase.
2. It must be clear or easily inferred that the Solution idea supports the Purpose.
3. Solution ideas should not contradict any part of the Future Scene parameters of topic, place, and time. The parameters do not need to be stated in the Solution idea, but the Solution should not be about a different topic, a different place, or a time period other than that of the Future Scene.
4. Solution ideas are written in statement form as definite proposals, using the word "will" rather than "may" or "might."
5. A Solution idea does not have to completely solve the Underlying Problem, but it must show a relationship to the UP.
6. For team problem solving, each team member should have the same action goal in mind before generating Solution ideas. Teams and individuals should keep a copy of the Underlying Problem KVP and Purpose in front of them as they go through the remaining Steps so they will remember exactly what they are trying to accomplish.
7. An elaborated Solution idea contains at least three significant areas of detail.
   - <u>HOW</u> the Solution will work
   - <u>WHY</u> it's a good idea
   - <u>WHAT</u> it will accomplish
   - <u>HOW</u>/<u>WHY</u> it will fulfill the goals of the Key Verb Phrase and/or Purpose
   - <u>WHEN</u> it will be completed or a timeline of actions
   - <u>WHERE</u> are relevant places for the Solution idea to be carried out, etc.

   While it is helpful to include *when* and *where*, these will only be counted toward elaboration if they are of a substantive nature. ("In the year 2063 on Titania" is not of a substantive nature.)

> **Elements of Elaboration**
> Here is an example of an elaborate (perhaps *over* elaborate, for the sake of illustration) Solution idea utilizing who, what, how, why, and a substantive where and when:
>
> Who: *The United Nations*
>
> What: *will initiate a new policy*
>
> How: *encouraging every nation to buy a stake in Oberon Corp. and eventually buy them out*
>
> Why: *in order to diversify access to Helium-3 collection.*
>
> Where: *This worldwide owned company will give each nation equal shares of the Helium-3*
>
> When: *and will begin immediately.*

> **Mistakes to Avoid**
> - Solution ideas that do not have a clear connection to the Key Verb Phrase and Purpose of the Underlying Problem. More information may be needed to make the connection.
> - Solution ideas that are not related to the Underlying Problem. Remember Step 3 is a direct response to the goals (KVP and Purpose) identified in Step 2.
> - Statements that do not describe a Solution Idea OR the idea is unclear.

HELPFUL HINTS

Generating a range of ideas will improve Fluency and Flexibility scores. Practice with the category list and brainstorming tools such as force fitting, SCAMPER, morphological matrix, and other creative problem solving tools for generating Solution ideas. Additional generating and focusing tools available though virtual modules at creativelearning.com.

> **SCAMPER**
>
> **S** ubstitute: What person or thing could serve in place of another?
>
> **C** ombine: What can be brought together or united?
>
> **A** dapt: How can something be adjusted to suit a condition or purpose?
>
> **M** odify: How can the color, shape, or form be changed?
>
> **M** agnify: How can it be made larger, stronger, or thicker?
>
> **M** inify: How can it be made smaller, lighter, or shorter?
>
> **P** ut to Other Uses: For what else can it be used?
>
> **E** liminate: What can be removed?
>
> **R** everse: How can it be turned around or placed opposite its original position?
>
> **R** earrange: How can the pattern, sequence, or layout be changed?

Just repeating the Key Verb Phrase and Purpose in the Solution idea does not illustrate how or why the Solution would be implemented. How the idea will address the KVP and how/why it will support the Purpose must be explained.

Imaginative inventions are fun, but inventions don't necessarily happen just because someone says it will. Sometimes inventions are "magical thinking" or in opposition to the laws of nature. Some level of explanation about how the invention will work may be needed to award a Relevant.
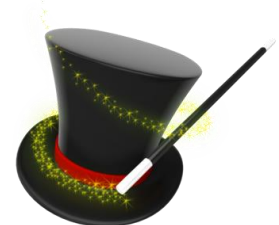
Futurizing is fun, and great for Solutions. Although it's best to avoid "magical thinking," it's a great idea to "futurize" Solution ideas as much as possible. Prepare by researching new technologies and future trends using journals such as *The Futurist*, *Futures*, or *Scientific American*. Brainstorm potential Solution ideas or use those found in research and practice making the ideas more futuristic. If necessary, remember to explain how the futuristic elements will work.

Using an appropriate WHO in Solution ideas is important. The actual *who* in a Solution idea should be the *person or agency* that will implement the Solution idea. For example, in a Solution idea for stress, such as "parents will talk to their children about school so they won't be stressed out," parents are part of *what* is happening. A lot of parents don't talk to their children about school, so something needs to happen to start them talking. A *who* in this case would suggest the person or people to do that, such as the school guidance counselor. The who should be a logical expert, agency, or organization. A celebrity may not be the appropriate person to create educational materials. Children of the world will not pass legislation. A pronoun such as we, they, he, she, etc. is not sufficient to count as "who."

> **A good WHO has PIE**
>
> A good WHO is a ***logical*** person, expert, agency, or organization to *undertake the implementation* of the Solution.
>
> They have the:
> - **P**ower,
> - **I**nterest, or
> - **E**xpertise
>
> to make the Solution happen.

> **What an evaluator looks for in Step 3**
> **Fluency** – Solution ideas that clearly address the Key Verb Phrase and support the Purpose presented in the Step 2 Underlying Problem.
> **Elaboration** – Relevant Solution ideas that include at least three significant who, what, why, how, where, and when elements.
> **Flexibility** – A variety of ideas presented in Solutions as demonstrated by the use of multiple categories.

STEP 4
Generate & Select Criteria

Criteria are the standards by which Solution ideas are judged. The Solution idea that best meets all of the criteria is considered the "best Solution" and becomes the basis for the Action Plan. Therefore, criteria should address aspects of the Solution ideas that will be very important in determining which Solution will best accomplish the goals of the Underlying Problem. The key objective in Step 4 is to generate ideas/criteria that serve as measurement standards to determine the creative potential and importance of Solution ideas.

ESSENTIALS

1. Criteria should be written to satisfy four guidelines.
   1. Focuses on a single standard
   2. Demonstrates a measure of degree using a superlative
   3. Indicates the desired outcome
   4. Recognizable as a question

> **Criteria Examples**
> - *Which Solution will be the <u>safest</u> for passengers?*
>   - Indicates a desirable direction
> - *Which Solution will be the <u>least safe</u> for passengers?*
>   - Does not indicate a desirable direction
> - *safest for passengers*

2. The specificity of the criteria content is considered. Criteria that are generic and can be applied to a wide variety of topics and situations score lower in points. Criteria that are specific to the research for the topic, Underlying Problem, and Future Scene score more points. All criteria, even those that are not Correctly Written are considered for their content. There are three categories of criteria that receive points.

Generic – A criterion that could be applied to nearly any Underlying Problem or Future Scene. Generic criteria with Future Scene parameters added (topic, place, time) are still rated Generic.

Modified - A criterion with a core idea that is generic, but with significant details from the Future Scene added These details may include stakeholders from the Future Scene; details from the Condition, Key Verb Phrase, or Purpose if used as a time constraint; or other key details from the Future Scene. Future Scene parameters alone (topic, place, time) are not enough to score as Modified.

Advanced - A criterion that uses the concept from the Key Verb Phrase or the concept from the Purpose.
- A criterion that uses concepts from the background research on the topic for this particular Future Scene or is specific to an element of the Future Scene that is not generic.
- A criterion that is generic but is justified with specific facts from the Future Scene that relate closely to its importance.

Criteria Relevance – Notes and Examples
Sample Underlying Problem for Criteria Relevance Examples: Because Oberon Corporation holds large amounts of economic and political power as the solar system's largest supplier of "extra-Earth" minerals and Helium-3, in what ways might we increase the variety of companies involved in the space program so that it will lessen Earth's dependency on the dominating Oberon Corporation on Earth in the year 2063 and beyond?

| **Generic**
 1 point – (G) | **Notes on Generic Criteria:**
 A criterion that could be applied to nearly any Underlying Problem or Future Scene
 • Generic criteria with Future Scene parameters added (topic, place, time) are still rated **Generic**.

 Examples of Generic Criteria:
 • *WSW last the longest?*
 • *WSW people accept the most on the topic of space?*
     o Topic parameter added is still generic
 • *Which Solution will be the safest in 2063?*
     o Time parameter added is still generic |

Criteria Relevance – Notes and Examples	
Modified **2 points – (M)**	**Notes on Modified Criteria:** A criterion with a core idea that is generic, but with significant details from the Future Scene added • These details may include stakeholders from the Future Scene or other key details from the Future Scene. • Future Scene parameters alone (topic, place, time) are not enough to score as **Modified**. **Examples of Modified Criteria:** • *Which Solution will be the safest <u>for Oberon Corporations workers in space</u>?* • *WSW be the most accepted by the <u>governments of Earth using Fusion energy</u>?* • *WSW be the quickest to implement for <u>Oberon's competitors</u>?* • *WSW be the easiest to implement <u>for companies working in space</u>?*

Advanced
3 points – (A)
 	
UP Based
	Notes on Advanced Criteria Based on the UP:
	A criterion that uses the concept from the Key Verb Phrase or the concept from the Purpose.
	• Both KVP and Purpose can be used to create criteria.
	
	Examples of UP Based Advanced Criteria:
	• *Which Solution will best increase the variety of companies involved the space program?*
	  ○ Based on KVP
	• *Which Solution will most effectively lessen the Earth's dependency on the dominating Oberon Corporation?*
	  ○ Based on Purpose

Topic Research / Future Scene Based	**Notes on Advanced Criteria Based on topic research and/or specific to Future Scene:** A criterion that uses concepts from the background research on the topic for this particular Future Scene or is specific to an element of the Future Scene that is not generic • A criterion based on relevant research *may* have modifying information from the Future Scene, but it is *not* required; however, the criterion must first be relevant! • Adding the KVP or Purpose to a generic criterion idea is modification, not making it specific. **Examples of research and/or Future Scene Based Advanced Criteria:** • *Which Solution will best comply with international business laws that govern harvesting of materials from space?* ○ Space law was part of the research on the topic of space. • *WSW be most effective in dealing with dangers of living in space?* • *WSW best avoid conflicts between governments competing in space?*

Criteria Relevance – Notes and Examples	
Advanced **3 points – (A)** **Justified with Future Scene facts**	**Notes on Advanced Criteria Justified with Future Scene Facts:** A criterion that is generic but is justified with *specific facts* from the Future Scene that relate closely to its importance. **Examples of Advanced Criteria Justified with Future Scene Facts:** • *Since unmanned shipments of Helium-3 will be sent from Midsummer Station to Earth only twice per decade, which Solution will best assure the safe delivery of the Helium-3?* • *Since the need for cost effective clean energy is ever increasing, which Solution will be the most sustainable?* • *Because the trade of fuel and minerals from space is international and therefore involving diverse populations and varying locations, which Solution will be the easiest to implement?*

Mistakes to Avoid
- Not Relevant to the Underlying Problem
    - A criterion that has no relevance to evaluating Solutions for this Underlying Problem
- Duplicate of another accepted criterion
    - A criterion that duplicates one of the other criteria being used.
      The criterion may not use the exact wording, but will essentially be evaluating Solutions based on the same concept.

HELPFUL HINTS

Thoughtful word choice impacts the meaning of criteria very quickly. Keeping your ideas clear and succinct helps to make sure that only one idea is addressed in each criterion. Words like "and" "or" "when" and "while" often serve to introduce a second concept. Successful criteria will address only one area.

Check for meaning: Some criteria lack meaning. One example of this is "Which Solution will be most effective?" Most effective at what? Be sure the meaning is clear.

Use facts for justification: A justification for a generic idea begins with Since… or Because… What follows must be *facts* from the Future Scene, *not assumptions*. Be sure that your justification is actually stated in the Future Scene and has a logical relationship to the criteria, for example how would a fact about the cost of something help identify the most humane Solution?

STEP 5
Apply Criteria to Solution Ideas

The key objective of Step 5 is to determine which Solution is the best one to address the Key Verb Phrase and support the Purpose in the Underlying Problem. The evaluation matrix (grid) is used for this Purpose. Applying the criteria to Solution ideas is an important focusing tool. Use the evaluation matrix (grid) to apply five criteria to the most promising Solution ideas in order to determine the best Solution. The best Solution then becomes the focus of the Step 6 Action Plan.

ESSENTIALS

1. Students select 8 of their most intriguing Solution ideas (5 for individuals) to enter into the evaluation matrix (grid). The matrix is used to rank the Solution ideas, considering one criterion at a time. The Solution idea with the highest overall ranking is the best Solution that will be used for the Step 6 Action Plan. Considering one criterion at a time, rank each of the Solution ideas against all others using that criterion. Repeat the ranking for each of the criteria.

2. In each column (one for each criterion), rank the Solution ideas from 1 (low) to 8 (high) or to the highest number that equals the number of Solutions ideas in the grid (5 for individuals). Use each number once in each column.

3. Add the ranks across the rows and enter the totals into the final column of the grid.

4. Use the Solution idea with the highest points as the basis for the Step 6 Action Plan.

5. If there is a tie for the highest points, choose one or the other. Breaking ties may be done in several ways (see the suggestions). The method used to make the choice may be shown on the grid, but this is *not required*.

Step 3 Solution	Solution Idea	Criteria 1	2	3	4	5	Total
#13	Space suits	6	4	6	7	5	28
#5	multiple companies	3	3	3	6	4	19
#9	Space X	1	8	4	4	3	20
#10	UN money	7	5	5	5	1	23
#15	Helium-3 scans	4	2	7	2	2	17
#1	Private transport	2	1	1	1	8	13
#7	new budget	5	6	2	3	7	23
#8	Mars rover	8	7	8	8	6	37

HELPFUL HINTS

<u>Best, then worst</u>: In ranking each Solution idea against a criterion, it may be easier to determine the best Solution ideas (8, 7) and then the least effective Solution ideas (1, 2). Then work to the middle.

<u>Not truly the best Solution</u> - If the highest scoring Solution idea does not represent a good or logical plan to address the Underlying Problem, it is usually due to one of these reasons:

- The criteria are not adequate.
- The rank-ordering of Solution ideas in the grid needs work.
- The <u>favorite</u> Solution idea is being mistaken for the <u>best</u> Solution.

Consider and address these potential concerns. The highest scoring Solution must be the one presented in the Step 6 Action Plan.

<u>Double-check addition</u>: Addition for the totals in the grid should be double-checked to be certain no mathematical errors have occurred. Use a calculator to add up the totals. If the sum is 180 (75 for individual grid with 5 Solution ideas), the grid is most likely completed correctly.

<u>Weighting</u>: If one criterion is more important than the others, its value can be increased to give it more "weight." <u>Weighting</u> a criterion means it carries more weight in determining your Action Plan. For example, if criterion #1 is twice as important as all others, it can be weighted as *2X*, which means all of the ranks under that criterion are multiplied by 2. Thus, instead of entering the numbers 8 through 1 below that criterion, the numbers 16, 14, 12, 10, 8, 6, 4 and 2 (10-2 for individuals) would be entered on the grid. The reason for this is not necessary, but please note that you have opted to weight a criteria to make your work clear to the evaluators.

<u>Don't manipulate</u>: The grid should not be manipulated. It is inappropriate to assign the same rank to each Solution idea for every criterion. It is unlikely that each Solution idea would receive the same rank from five different criteria.

<u>Breaking a tie</u>: If after completing the grid two or more Solution ideas tied for the best Solution, the tie must be broken. Any of these methods may be used for breaking the tie. It is helpful to let the evaluator know how the tie was broken, but it is not required. Some examples include the following:

- Introduce a sixth criterion and evaluate the tied Solutions with that criterion.
- Go back and weight one or more criteria.
- Eliminate all other Solution ideas and have a head-to-head play-off between the tied Solution ideas using your original five criteria.
- Decide which one is better and state a reason.

It is important that only one Solution idea "win" the grid and be developed into your Action Plan in Step 6. Improper use of the grid (i.e. ignoring the outcome, or using multiple Solution ideas) leads to receiving only 1 point.

STEP 6
Develop an Action Plan

An Action Plan is a *proposal* for solving the Underlying Problem. The Action Plan should explain in detail the *who, what, how, why, where,* and *when* of the Solution idea. Developing an Action Plan involves moving from creative ideas into action; a new idea is incomplete until it is a workable idea. The Action Plan demonstrates how it addresses the area of concern of the Underlying Problem and how it positively impacts the Future Scene.

ESSENTIALS

1. The Action Plan MUST focus primarily on the best Solution as identified by using the evaluation matrix (grid) in Step 5.
2. The Action Plan should first introduce the basic idea, similar to what was written about it in Step 3 – Solution Ideas.
3. Many additional facets may be added to the idea at this point, with the goal of showing a complete plan and strategies for implementation of the best Solution.
4. The Action Plan *may* describe timelines and tasks, details on how the Solution will operate, potential obstacles and how to overcome them, how the plan will address the Underlying Problem, how/why it will have a positive impact on the Future Scene, etc.

HELPFUL HINTS

<u>Connect the plan</u>: Tie the Action Plan back to the Underlying Problem, the Future Scene, the criteria, and the topic.

<u>Elaborate</u> - The original Solution idea may be used as the starting point for the Action Plan, but the plan should go well beyond that idea with many details.

<u>Develop the plan</u>:

- Include information on <u>who</u> will carry out the plan, <u>what</u> will be done, <u>how</u> it will work and <u>when</u> milestones will occur.
- Describe how the Action Plan directly responds to the goals created in the Underlying Problem.
- Discuss the effectiveness of the plan (how well it solves the Key Verb Phrase and supports the Purpose).
- Include ideas about how the plan addresses the criteria developed in Step 4.
- Consider the broader impact of the plan (the ways in which it will affect the Future Scene).
- Analyze the humaneness of the plan (how productive and positive the plan will be if achieved).
- As an option, describe obstacles that may occur and how they might be overcome.

<u>Be creative and persuasive</u>: Sell the idea! Be mindful that wildly creative ideas do not distract from how appropriately the Action Plan solves the Underlying Problem.

<u>Other Solutions</u> - Be careful if using other Solution ideas as part of the Action Plan. Another idea or two from the grid is acceptable if truly supporting the best Solution idea and not overshadowing it, but the overall plan should be a unified effort to address the Underlying Problem.

What an evaluator looks for in Step 6

Relevance – Demonstrates the relationship of the Action Plan to the Underlying Problem.

Effectiveness – To what extent does the Action Plan actually accomplish the goals identified in the Underlying Problem?

Criteria in Development of Action Plan - How well do they explain the thinking that went into their choice of Action Plan and what part did their criteria play in that thought?"

Impact – Is the UP of enough significance, and the Action Plan clearly linked to it, thus having a strong impact on the Future Scene as a whole?

Humaneness – Will the Action Plan have a productive, positive potential as opposed to a destructive negative potential?

Development of Action Plan – Was a complete strategy for implementing the Action Plan presented?

OVERALL

The overall scores reward problem solvers who can combine research, creativity, and futuristic thinking to effectively work from a Future Scene to a focused Action Plan using the creative problem solving process. Some Steps of the process lend themselves to more effective demonstration of these concepts. It is the "Overall" impression that the booklet gives in these three areas that determines the scores.

Evaluators are looking for work that shows evidence of preparation, but that also demonstrates a spontaneous and creative response to the Future Scene. "Memorizing" developed ideas ahead of time and force fitting them to the Future Scene is in opposition to the principles of Future Problem Solving.

ESSENTIALS

1. Relevant research concepts and terms are used throughout the booklet to demonstrate a solid understanding of the topic, and the likely future trends that will result.
   - Vocabulary terms and facts specific to the topic studied are an indicator of research.
   - Examples and incidents from the research may be woven into the Challenges, Solutions, and Action Plan.
   - Criteria selected may mirror key issues encountered in the relevant topic research.
   - Application of knowledge from other areas of study may also be relevant.
2. Responses showing creativity are those requiring intellectual energy to make mental leaps beyond obvious or commonplace responses. A diverse range of ideas as well as effective application of the problem solving process indicates creative thinking.
   - Unique ideas that earned originality points indicate a strong level of creativity.
   - Skillful use of the problem solving process and spontaneous response to the Future Scene are indicators of creative thinking.
   - High scores on the creativity scales of fluency, flexibility, and elaboration are signs of creative strength.
3. Discussion and research that extends current knowledge of the topic into the future and that identifies future trends and technologies that may be relevant to the topic is recommended.
   - A demonstrated understanding of relevant trends from the research is evidence of futuristic thinking.
   - An awareness of potential future technologies exhibits knowledge of future trends.
   - Development of futuristic, yet workable ideas is essential. Trivial, magical, or unworkable ideas are not evidence of futuristic thinking.

HELPFUL HINTS

<u>Practice embedding research</u> terms, concepts, and information into the Steps of the problem solving process is recommended. Oftentimes a vocabulary list is a great place to start. It provides students with a better understanding of the Future Scene and terms they will likely see, and as well as allowing them to speak with confidence on topics that are often well beyond their years.

<u>Generate lots of ideas.</u> Familiarity with a variety of creative thinking tools for generating ideas is recommended. All good brainstorming begins with some ground rules. Practicing the rules and goals of brainstorming will make it second nature by the time competitive rounds begin.

What an evaluator looks for in Overall

Research Applied – To what extent was the application of research throughout the booklet demonstrated?

Creative Strength - Consider the creative, productive thinking in evidence throughout the booklet.

Futuristic Thinking - Examine the ability of students to put themselves into the time frame of the Future Scene.

References for Coaches

EVALUATION CRITERIA

The full Evaluation Guidelines for Global Issues Problem Solving are published annually by FPSPI for the upcoming competition season. These are the official rules that participants must adhere to at the International Conference. Affiliate programs are encouraged to follow these Guidelines, though check with your Affiliate to confirm any adaptations they may have made. Below is a brief overview of scoring components.

Step 1 / Challenges

Y   *Yes!* This is a possible Challenge.

P   *Perhaps* this is a Challenge. Explain more completely.

W   *Why* is this a Challenge? The evaluator cannot see the connection.

S   This is a *Solution* idea instead of a Challenge.

D   This Challenge is a duplicate – too similar to another one.

Fluency measures the quantity of Yes Challenge ideas.

Flexibility measures the number of different categories covered by the Yes Challenges.

Clarity measures the quality of the writing and the cause-effect reasoning in the Challenges.

Originality is awarded for innovative ideas not generated by most other teams.

Step 1 Scoring Guidelines												
Fluency - A Yes challenge is a logical cause or effect of the situations in the Future Scene. **Score**	Fluency is determined by totaling the number of Yes challenges and using the following scale:											
	Number of Yes challenges:	1	2	3	4	5-6	7-8	9-10	11-12	13-14	15-16	
	Number of points awarded =	1	2	3	4	5	6	7	8	9	10	
Flexibility - Measures the number of different categories in Yes challenges **Score**	Flexibility is determined by totaling the number of different categories identified.											
	Number of distinct categories:	1	2	3	4	5	6	7	8	9	10	
	Number of points awarded =	1	2	3	4	5	6	7	8	9	10	

Clarity - Tells what the concern is, why it is a concern, and relates it to the Future Scene **Score**	Hard to determine what challenge is; cause-effect reasoning may be absent or incorrect 1 2 3	Most convey basic idea; lacks detail; cause-effect reasoning is vague or takes leaps 4 5 6	Clear explanations; some detail; most cause-effect relationships make sense 7 8	Well written; clear descriptions with detail; logical cause-effect relationships 9 10

Originality - Three bonus points may be awarded to any Yes challenge that shows unique creativity or insight into the future scene.

Step 1 Scores	Fluency (1-10)	Flexibility (1-10)	Clarity (1-10)	Originality (x3)	Total

Step 2 / Underlying Problem

Completeness considers **Condition Phrase, Stem+Key Verb Phrase, Purpose, and parameters to** evaluate that the required elements in the UP are present.
Focus looks at the scope of the UP and whether it is too broad or too narrow.
Adequacy judges the importance of the UP and the impact on the Future Scene.

Step 2 Scoring Guidelines				
Condition Phrase **Score**	Not present 0	Inaccurate information or unrelated to KVP 1	Present, accurate, and related to Future Scene 2	
Stem and **KVP** **Score**	Key Verb Phrase not present 0	Present but multiple verb phrases 1	Present but multiple objects or modifiers 2	Present and contains a single active verb phrase 3
Purpose (P) **Score**	Not present 0	Present but more than one or repeats KVP 1	Present but no clear relationship to KVP 2	Present and singular with logical relation to KVP 3
Future Scene Parameters **Score**	0 or 1 Parameter present 0	2 Parameters present 1	Topic, place, and time present 2	
Focus of Underlying Problem **Score**	Restates, broadens, or ignores FS 1 No purpose or not connected to KVP; Purpose repeats KVP and/or CP 1 2 3	Too broad or too narrow KVP with stated purpose; UP not clearly worded; multiple KVP or purpose 4 5 6	UP contains a good KVP, the goal or purpose is evident and addresses Future Scene charge 7 8	Excellent KVP that ties directly into a well defined, clearly written purpose and addresses Future Scene charge 9 10
Adequacy/Importance of Underlying Problem **Score**	Restates, broadens, or ignores FS 1 No purpose or not connected to KVP; Purpose repeats KVP and/or CP 1 2 3	Identifies minor issue from the Future Scene 4 5 6	Identifies an appropriate issue from the Future Scene 7 8	Identifies a major, important issue from the Future Scene 9 10

Step 2 Scores	Condition (0 - 2)	Stem/KVP (0 - 3)	Purpose (0 - 3)	FSP (0 - 2)	Focus (1-10)	Adequacy (1-10)	Total

Step 3 / Solution Ideas

R   This is a *Relevant* Solution that addresses the Key Verb Phrase of the UP and supports the Purpose.
P   *Perhaps* this is a Solution. Explain more completely.
W   *Why* is this a Solution? Does not seem to address the KVP and Purpose.
D   This Solution idea is a duplicate – too similar to another one.
Fluency measures the quantity of Relevant Solution ideas.
Elaboration rates the number of Relevant Solutions with three areas of significant detail.
Flexibility rates the number of different categories covered by the Relevant Solutions.
Originality is awarded for Relevant innovative ideas not generated by most other teams.

Step 3 Scoring Guidelines											
Fluency - A relevant solution idea addresses the KVP and supports the purpose **Score**	Fluency is determined by totaling the number of relevant solution ideas and using the following scale:										
	Number of relevant solution ideas:	1	2	3	4	5-6	7-8	9-10	11-12	13-14	15-16
	Number of points awarded:	1	2	3	4	5	6	7	8	9	10
Elaboration - Any relevant solution idea that includes at least 3 who, what, why, how, where and when elements **Score**	Elaboration is determined by totaling the number of elaborated solutions in relevant solution ideas:										
	Number of elaborated solution ideas:	1	2	3	4	5-6	7-8	9-10	11-12	13-14	15-16
	Number of points awarded =	1	2	3	4	5	6	7	8	9	10
Flexibility - Measures the number of different categories in relevant solution ideas **Score**	Flexibility is determined by totaling the number of different categories identified.										
	Number of categories:	1	2	3	4	5	6	7	8	9	10
	Number of points awarded =	1	2	3	4	5	6	7	8	9	10
Originality - Three bonus points may be awarded to any relevant solution idea that shows unique creativity or insight											

Step 3 Scores	Fluency (1-10)	Elaboration (1-10)	Flexibility (1-8)	Originality (x3)	Total

Step 4 and 5 / Criteria and Grid

Correctly Written judges the structure of a single standard, superlative, desired outcome, and is recognizable as a question.

Relevance judges whether the criteria are generic to any UP or specific to this UP.

Correctly Used judges to what extent the grid is completed accurately.

Steps 4-5 Scoring Guidelines					
Correctly Written (CW) Measure of degree, single dimension, worded in desired direction **Score**	One point is awarded for each correctly written criterion. A correctly written criterion **MUST** include all three: a superlative - 'st' word, focus on a single dimension, and phrased in the desired direction. Number of correctly written criteria = 0 1 2 3 4 5				
Relevance to the UP **Score**	Total Relevancy Points from the table below				
	0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15				
Correctly Used **Score**	Grid has 3 or more errors; top solution not used in Step 6 **1 2**	Grid contains 2 errors **3**	Grid contains 1 error **4**	Grid contains no errors **5**

	Correctly Written (0-5)	Relevance (0-15)	Correctly Used (1-5)	Total Points
Step 4-5 Scores				

	CW (√)	A = Advanced 3 points	A/M/G/D/NR	Rel Pts	Steps 4-5 Comments:
1		M = Modified 2 points			
2		G = Generic 1 point			
3		D = Duplicate 0 points			
4		NR = Not Relevant 0 points			
5					
			Total		

Rank Ideas

Step 6 / Action Plan

Relevance measures the relationship of the plan to the Underlying Problem KVP and Purpose.

Effectiveness evaluates how well the plan successfully solves the UP.

Criteria in Development of Action Plan examines the degree to which Criteria are incorporated into the Action Plan.

Impact determines to what extent the plan will have a positive impact on the Future Scene.

Humaneness measures the productive, positive potential of the plan.

Development of Plan measures how well a comprehensive, workable plan has been presented.

Step 6 Scoring Guidelines

Relevance - Measures the plan's relationship to the Underlying Problem **Score**	Action Plan does not address the UP 1	Action Plan has some relation to the UP; another solution might be better 2 3	Action Plan does a good job of addressing the UP 4	Action Plan has an excellent relationship to the UP 5
Effectiveness - Measures the potential ability of the Action Plan to successfully solve the UP **Score**	Action Plan does little to solve the UP 1	Action Plan solves some aspects of UP 2 3	Action Plan adequately solves UP 4	Action Plan completely solves UP 5
Criteria in Development of Action Plan - the degree to which criteria are addressed in Action Plan **Score**	Action Plan does not address the criteria 1	Action Plan's connection to criteria is minimal or unclear 2 3	Action Plan makes some valid connections to criteria 4	Action Plan addresses criteria in a convincing manner 5
Impact - Measures the positive effect of the Action Plan on the Future Scene **Score**	Action Plan has no effect; UP scored low in adequacy 1	Effect on the Future Scene is not strong; UP low in adequacy 2 3	Action Plan has effect on Future Scene; UP of average adequacy 4	Plan has strong impact on Future Scene; UP high in adequacy 5
Humaneness - Measures the productive, positive potential of the Action Plan **Score**	Negative or destructive Action Plan 1 2	Action Plan is neutral - neither positive nor negative 3	Constructive potential evident 4	Action Plan is positive and constructive 5
Development of Action Plan - The degree to which the team explains its plan **Score**	Minimal description of plan; rewrite of Step 3 solution idea 1 2 3	Plan provides some elaboration; more support of ideas needed 4 5 6	Plan explains the who, what, why, and how in detail 7 8	Plan structured and well elaborated detailing more than the basic W-W-W-H elements 9 10

Step 6 Scores	Relevance (1-5)	Effectiveness (1-5)	Criteria (1-5)	Impact (1-5)	Humaneness (1-5)	Dev. Action Plan (1-10)	Total

Overall

Research Applied rates the application of research shown throughout the booklet.
Creative Strength measures the creative, productive thinking shown in the booklet.
Futuristic Thinking evaluates how well the team has addressed issues of the future.

Overall Scoring Guidelines

Research Applied Relevant terms and ideas **Score**	Minimal evidence of research terms, concepts, issues, trends 1 2 3	Average evidence of research terms, concepts, trends for age group 4 5 6	Noticeable evidence of research terms, concepts, trends 7 8	Evidence of research and thorough knowledge of topic readily apparent 9 10
Creative Strength Original, productive, thinking **Score**	Minimal evidence of creative thinking 1 2 3	Some attempt at creative thinking evident in parts of booklet 4 5 6	Innovative thinking, insightful ideas; parts of booklet go beyond the ordinary 7 8	Strong display of inventive, ingenious ideas throughout the booklet 9 10
Futuristic Thinking Relevant trends and technologies projected into the future **Score**	Minimal evidence of futuristic trends or technologies 1 2 3	Average futuristic ideas for age group 4 5 6	Futuristic concepts present throughout booklet 7 8	Excellent futuristic concepts that indicate how ideas impact future society 9 10

Overall Scores	Research Applied (1-10)	Creative Strength (1-10)	Futuristic Thinking (1-10)	Total

SPONTANEOUS RESPONSES

The educational goal of Global Issues Problem Solving is to prepare students to respond to real world Challenges using problem solving skills. With this in mind, problem solvers should respond directly and creatively to the Future Scene. While preparation and practice is important, memorizing "pre-packaged" Challenges, Underlying Problems, Solutions, criteria, and action plans and making them fit the Future Scene does not meet the educational goals of the program.

For competitive Global Issues Problem Solving competitions such as Qualifying or Affiliate Final/Bowl or the International Conference, students do not see the Future Scene in advance. In these situations, evaluators reward students for responding directly to the Future Scene, recognizing teams/individuals that **use their creativity to respond spontaneously to a situation.** This furthers FPSPI's educational goal of preparing students to respond to real world Challenges.

The students spend time researching the topic and developing ideas that might be relevant to the Future Scene; however, they do not see the Future Scene until the two-hour competition begins.

The students must analyze the contents to determine what part of their research on the topic does and does not apply to the Future Scene.

The ability to be prepared and informed, and thus capable to respond to an unknown situation is at the core of the mission of FPSPI. <u>Unfortunately, participants sometimes rely too much on their preparation and do not use their creativity to respond directly to the Future Scene.</u> Students should use their preparation to jumpstart brainstorming and understanding of the Future Scene. Evaluators are encouraged to reward students for creative, spontaneous ideas in direct response to the Future Scene.

> **FPSPI Mission:**
> To develop the ability of young people globally to design and achieve positive futures through problem solving using critical and creative thinking.

QUESTIONS?

There are many people that are not only able to answer questions, but would enjoy the opportunity to discuss FPS with you! The Affiliate Director for your geographic region can assist with things ranging from new coaches needing guidance, to the specific dates and costs for events in your area.

Questions about this resource should be directed to the International Office. Seeking curricular materials or wonder how FPS the International Conference works? Not sure where to start? Contact the International Office at www.fpspi.org or 321-768-0074. It would be our pleasure to assist.

Category List

Arts & Aesthetics

Basic Needs
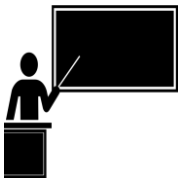
Business & Commerce

Communication

Defense

Economics

Education

Environment

Ethics & Religion

Government & Politics
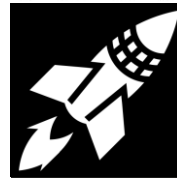
Law & Justice

Miscellaneous

Physical Health

Psychological Health

Recreation

Social Relationships

Technology

Transportation

"Sixty years ago I looked up at that star," my great-grandfather points toward a point of light through the station window. *"Scientists laughed at me when I said I'd send a probe there. But look at what we have achieved, William! Sixty years from now, the probe we launched today will send back the first images of the star system, Alpha Centauri."* He sighs quietly, *"I wish I could be alive to see the results."*

While CEO of our family business, the Oberon Corporation, my great-grandfather paid for the development of the Herschel 1 probe. Herschel 1 launched today from our moon and is headed for the Alpha Centauri System four light years away. The probe contains a transmitter, an imaging device, and fusion generators for power. It will take over sixty years before we can be sure it has arrived.

At 100 years old, my great-grandfather has seen more scientific and social progress in his life than almost any other living person. When he was born in 1963, a national tragedy gave way to fears that the new president wouldn't continue to support the U.S. space program - but that didn't happen. The wonderful achievements of that decade are often referred to as "the golden age of space exploration." By the start of the 21st century, creative entrepreneurs like my great-grandfather were taking control from governments as the corporate space age took shape.

The space elevator brought my great-grandfather and me 62,000 miles up to Port Earth Station. From there we could watch the launch and enjoy just one example of the achievements of entrepreneurs like my great-grandfather. Port Earth Station is effectively an orbiting city - a "new star," as my great-grandfather likes to say. Some 3,500 scientists, engineers, and marketing-specialists live semi-permanently on the station - and most of them are employees of Oberon Corporation. Even with rival mineral mining concerns on the Moon and Mars, our corporation remains the solar system's largest supplier of "extra-Earth" minerals and Helium-3, the main fuel in fusion power generators - and we intend to keep it that way.

Our next venture will be the biggest and best achievement of Oberon Corporation. On the Uranian moon of Titania, 1.7 billion miles away, we are planning for our newest settlement: Midsummer Station. It will be the farthest human settlement from Earth, with a planned population of 600 people who will be able to survive on the moon because of Titania's interior water ice mantle. Three Helium-3 collectors in the atmosphere of Uranus will supply Midsummer Station with all the fuel needed to run its fusion reactors and power its mining facilities. Twice-per-decade, unmanned shipments of Helium-3 will be sent from Midsummer Station to Earth. This will provide a nearly inexhaustible supply of fuel for Earth's own fusion reactors. Because of these shipments, clean energy will course through the power relays of Earth and the human footprint will continue expanding toward the edges of our solar system and beyond. All of this, the very future of space exploration, has been made possible by my great-grandfather and the entrepreneurial skill he showed decades ago.

And what is the cost for this endless supply of clean energy? As the first to mine the abundance of Helium-3 on Titania, we have almost complete control over the price. Cost will not stand in the way of my great-grandfather's vision. And what if governments try to tax our profits or regulate our corporation? Well, mining Helium-3 is expensive and regulation tends to make it more expensive - so expensive that if governments do regulate us, they may hurt their own chances of enjoying the benefits of fusion energy. I'd say we have a pretty sound business model. *FPSers, use the six-Step problem solving process to address the implications of Oberon Corporation's space expansion in the late 21st century and beyond*.