GLOBAL ISSUES PROBLEM SOLVING KEY TIPS
Team and Individual

Future Problem Solving (FPS) is a challenging and rewarding program. Proficiency in FPS is a result of understanding the FPS model and mastering the tools used in problem solving. The following tips are offered to help coaches and students better understand Global Issues Problem Solving.

The FPS *Coach's Handbook* offers a comprehensive overview of the FPS model and suggests activities to introduce generating and focusing tools. The FPS *Evaluation Primer* provides FPS coaches with insight into the evaluation process. Understanding evaluation improves a coach's skills in teaching FPS. Contact Future Problem Solving Program International or visit www.FPSPIMart.org for information on the *Coach's Handbook,* the *Evaluation Primer,* and other FPS materials.

PREPARATION

Research: It is important to prepare for Global Issues Problem Solving. Research is a key component in FPS. Prior to reading the future scene, the students should have a good understanding and information about the topic. The FPS *Readings, Research, and Resources* is an excellent source for initiating research. This book or CD is available through the FPSP international office.

Books, news magazines, futuristic periodicals, and other helpful information can be found in the school library. The internet is a good resource for locating information on FPS topics. Field trips, real life experiences, and local experts are excellent means to provide research opportunities.

Analyze: The details of the future scene should be identified. Each member of the team should read the future scene silently and record his/her reaction before discussing the future scene as a team. Individuals must do this on his/her own.

- Identify the future scene parameters (time, place, topic) and vocabulary specific to the future scene.
- Answer pertinent questions: What is the charge? Who is challenged, involved, or affected within the future scene?
- Relate the future scene to the research. What has changed? What is the same?

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 in the future scene that needs attention or consideration (points of importance).

A challenge is a logical cause or effect of the situations in the future scene. Use your knowledge of the topic to determine challenges from the actions within the future scene. Your goal is 16 well-written challenges. (8 for individuals)

Step 1 – *Essentials*

1. Student work must relate to the future scene, a hypothetical scenario based on current information. In cases where research can be found that contradicts the future scene, students are still required to problem solve within the boundaries of the given situation.
2. Step 1 challenges are written in statement form rather than questions.
3. Challenges are stated in terms of possibility using terms such as *may, might,* etc. Absolute terms that indicate idea *X* 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.
4. Challenges must be clearly stated and logically relate to the future scene - tell what the concern is, and why it is a concern - to be scored high in clarity.
5. Students should demonstrate flexibility in their thinking and explore challenges from different perspectives or categories.

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Step 1 – *Suggestions*

1. Teams/individuals often fail to earn high scores in fluency because information explaining a challenge statement is left "on the problem solving table." Writing with more clarity will help an evaluator understand a challenge. 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***.

    Challenge examples *a* and *b* from the future scene on Antarctica provide good examples.

    a. This challenge statement clearly tells ***what*** the challenge is, ***why*** it is a challenge, and ***how it logically relates to the future scene.***
        - *If the use of CFCs continues in 2025, then the ozone layer over Antarctica may be depleted. As a result, increased UV radiation may harm many of the animals and people living in Antarctica*.

    b. The next concern uses facts in the future scene to develop a challenge statement that tells ***what*** the challenge is, ***why*** it is a challenge, and ***how it logically relates to the future scene***.
        - *According to the future scene, in 2025, a ship coming to Antarctica leaked oil in the waters around Antarctica. This oil may harm the animals living in these waters if they swallow it or it coats their fur.*

    Challenge examples *c* and *d* omit some very important information.

    c. The following challenge statement identifies a challenge (depletion of the ozone layer). It doesn't tell ***why*** depletion of the ozone is a challenge and ***how it logically relates to the future scene*** (Antarctica).
        - *In 2025, the ozone layer could be depleted.*

    d. The following is a statement of fact from the future scene. As a challenge statement it does not tell ***what*** the challenge is or ***why*** it is a challenge. We can <u>infer</u> the challenge is the oil spill; however, students must explain ***why*** an oil spill is a challenge ***logically related to the future scene***.
        - *According to the future scene, in 2025, a ship leaked oil in the waters around Antarctica.*

Helpful Hints:

1. Reciprocal cause/effect relationships can be used when generating challenges.
    - ***Reciprocal cause/effect relationships:*** Effects may be part of a chain. In this kind of structure, an effect goes on to cause a second effect (second challenge), which may then cause a third effect, etc.
    - ***Signal words that show cause/effect relationships include but are not limited to:*** because, so, that, if…then, consequently, thus, since, for, for this reason, as a result of, therefore, this is how, nevertheless, accordingly…
2. Fluency and flexibility can be expanded by using the generating Creative Problem Solving tools such as brainstorming, forced relationships, and checklisting. (See *Coach's Handbook*, "Basic Skills & Tools.") To think in terms of categories, the future scene can be subdivided into two or three general subheadings (e.g., *Environment* or *Land, Tourism, Man* and *Antarctic Treaty*) and the Category List provided in this guide can be utilized. ***Caution***: Not all categories will apply to every topic and future scene.
3. Terms and concepts from research can help to explain and relate the challenge statements. Citing the source of information is not required, but is acceptable. 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.

4. If a challenge or concern is mentioned in the future scene, it can be included in the list of challenges provided the challenge elaborates on what is stated in the future scene to offer greater insight as to ***why*** something is a challenge.
    - Restating a fact/concern from the future scene is not enough to earn credit as a challenge.
    - Students must develop the fact/concern, extending it to a new level.
5. Quality is sometimes more important than quantity. While the goal is 16 well-written challenges (8 for individuals), it is up to the students to decide if 12 (6) 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.
6. Examples of 'Yes' challenges at varying levels of expertise from the Cashless Society future scene (*Preparing a New Generation of Problem Solvers*) are provided. More advanced levels have a greater chance of scoring a 'Yes' and earning higher flexibility and clarity scores.
    - (Novice level) Kids may never learn the value of money in a cashless society.
    - (Experienced level) Because they will not have actual contact with money, children in Leabeau County may have a hard time learning the value of money.
    - (Expert level) Without piggy banks children may never learn the values of saving due to lack of actual physical money. This may cause economic problems in the future because when these children are adults they won't know how to properly save.
    - (Expert plus) According to Time Magazine, adults heavily in debt were often not taught to save as children so without piggy banks children may never learn the values of saving due to lack of actual physical money. This may cause economic problems in the future because when these children are adults they won't know how to properly save. (Note research added)
7. **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 there are many intermediate consequences before such major disasters would overtake us. For example, cramped quarters in homes or undersea vessels could lead to stress and tension between people. This is a reasonable consequence. It is an extreme measure to assert that people might start fighting and everyone would kill each other.

STEP 2 – SELECT AN UNDERLYING PROBLEM

Step 2 focuses on the important part of the future scene that is chosen to solve. The challenges from Step 1 should be considered and one that will have the most impact on the future scene determined.

Step 2 – *Essentials*

1. An underlying problem (UP) may be composed of *one challenge or one category of challenges or a compilation of several related challenges* identified in Step 1 to be solved in Step 3. An underlying problem that restates the entire future scene is inappropriate.

   Effective problem solving means a large challenge is broken down into smaller, more manageable challenges. In other words, it would be very hard to solve all the challenges of Antarctica at once. Instead, it would be easier and more effective to attack one important challenge or one category of challenges at a time.
    a. A challenge that is an underlying *cause* of the future scene makes an excellent underlying problem.
        - *In 2025, when many tourists are visiting Antarctica and leaving behind damage and destruction, how might we reduce the amount of harm to the continent caused by tourists so Antarctica may remain a pristine environment?*

b. Another way to select an underlying problem is to address an area or category of concern. For example, we can first attack environmental challenges, then economic challenges, followed by recreation, etc.

- *A tourist ship developed a leak in its fuel tanks, and it took months to clean up. In what ways might we protect Antarctica's animal inhabitants in 2025 so Antarctica's unique species do not become endangered?*

c. 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.

d. Multiple ideas should not be included in the underlying problem.

2. A Step 2 underlying problem is never as large as the future scene; instead, an underlying problem focuses on one challenge category (or area).
   a. The following are **good examples** of a correctly written underlying problem:
      - *Since Antarctica is threatened by expanded tourism, how might we increase the environmental awareness of the tourists in Antarctica in 2025 so Antarctica's environment will be preserved?*
      - *Because tourists have caused damage, how might we reduce the destruction of Antarctica's ecosystem so the food chain will not be disrupted in 2025?*
      - *A tourist ship developed a leak in its fuel tanks, and it took months to clean up. In what ways might we protect Antarctica's animal inhabitants in 2025 so Antarctica's unique species do not become endangered?*

   The following examples are **weak underlying problems**. Each example **restates the future scene**. Underlying problems like these are considered restatements of the future scene and score low in focus and adequacy.

   b. **The following are examples of weak underlying problems**.
      - *Because of the increased tourism, how might we overcome the problems in Antarctica so it will be preserved?*
      - *Since land claims no longer exist, how might we help save Antarctica in 2025 and beyond so it will not be destroyed?*
      - *Because of the many challenges, how might we overcome the challenges of Antarctica in 2025 so it is protected?*
      - *How might we solve (or overcome, or develop remedies for, or reduce) the challenges of Antarctica so …*?

   Without narrowing the future scene, teams/individuals place themselves in a very precarious position. If an underlying problem restates the entire future scene as described above, the booklet receives scores of one (1) in focus and one (1) in adequacy in Step 2.
3. An underlying problem is stated as one question and contains four basic components.
   a. ***C – Condition Phrase*:** The condition phrase is actually a lead-in fact from the future scene or related research that is the basis for or cause of the challenge the team/individual chooses as its underlying problem. The condition phrase guides (forces) the students to make a connection to the future scene and the Step 1 challenge(s) used as the focus of the underlying problem. *"A tourist ship developed a leak in its fuel tanks, and it took months to clean it up." (Because* or *since* are options in developing a condition phrase.)

   b. **Stem + Key Verb Phrase (KVP):** The underlying problem includes a **stem** ("How might we" or "In what ways might we") and **one key action verb** in a phrase that mandates what must occur in Step 3 to solve the underlying problem. The KVP provides direction for generating solution ideas in Step 3. Relevant solution ideas are those that do what the KVP mandates. For example, from the Antarctica future scene, if your underlying problem begins, *"A tourist ship developed a leak in its fuel tanks, and it took months to clean up. In what ways might we protect Antarctica's animal inhabitants in*

2025 so Antarctica's unique species do not become endangered?" (KVP is underlined), then all of your Step 3 solution ideas must "*protect Antarctica's animal inhabitants*" to be considered relevant.

c. ***P – Purpose*:** The purpose specifies an optimal direction, goal to pursue, or reason for solving the challenge. The purpose is singular and provides direction for the KVP. It serves as the ultimate goal of the underlying problem. The purpose is also a condition that must be satisfied for Step 3 solution ideas to be considered relevant. For example, if the underlying problem is *"A tourist ship developed a leak in its fuel tanks, and it took months to clean up. In what ways might we protect Antarctica's animal inhabitants in 2025 so Antarctica's unique species do not become endangered?"* (P is underlined), then relevant solution ideas must not simply "*protect Antarctica's animal inhabitants*" but they must do so in such a way that "*Antarctica's unique species do not become endangered.*"

Note: Leaving out the purpose can negatively affect scores in both Step 2 and Step 3. In Step 2 teams/individuals lose three (3) points in structure and receive focus scores between one (1) and three (3). In addition, evaluators will impose a purpose that seems logical to the future scene. Solution ideas in Step 3 are scored for relevance very strictly against the KVP, ***the imposed*** purpose, and the future scene parameters. In competition, a team/individual whose UP has no purpose has a hard time advancing to further rounds of evaluation.

d. ***FSP – Future Scene Parameters*:** Parameters are conditions that place your underlying problem within the confines of the future scene. Including parameters of the future scene in your underlying problem ensures the challenge is a sub-area of the future scene. The parameters are found, of course, in the future scene and include place (geographic location involved), topic (major focus of the future scene), and time (the year).

CAUTION: Relevant solution ideas to your underlying problem will not contradict any part of the FSP. For example, if your underlying problem is, *"A tourist ship developed a leak in its fuel tanks, and it took months to clean up. In what ways might we protect Antarctica's animal inhabitants in 2025 so Antarctica's unique species do not become endangered?"* (FSP are underlined), then relevant solution ideas must not simply "*protect animal inhabitants*" and do so in such a way they will not "*become endangered*" but they must do so in relation to the place and topic (Antarctica) and time (2025) listed in the future scene. Even if students forget to include the FSP in its underlying problem, solution ideas still need to fall within these parameters to be scored relevant in Step 3.

4. The underlying problem used in the above example has been broken down into the five basic components that follow:
   - *A tourist ship developed a leak in its fuel tanks, and it took months to clean up. **(CP)** – How might we **(S)** – protect Antarctica's **(FSP)** animal inhabitants **(KVP)** – in 2025 **(FSP)** – so Antarctica's **(FSP)** unique species do not become endangered? **(P)***

   The following two examples are from two different future scenes:
   - *Because children in a cashless society **(FSP)** will not have the opportunity to hold their money **(FSP)** in their hands or save it in a piggy bank **(CP)** – in what ways might we **(S)** – help children to learn monetary concepts **(KVP)** – so they will become financially responsible adults **(P)** – in Leabeau County after 2031? **(FSP)***
   - *Because it may not be clear in whose hands political and legal authority rests in the unique situation of the colony on Mars* (**CP**)*,, how might we* (**S**) *establish institutions necessary for the governance of the colony* (**KVP**)*, so immigrants to Mars are protected by the rule of law* (**P**) *in 2053 and beyond?* (**FSP**)

   Note: Delineation of ***CP, S, KVP, P*** and ***FSP*** in the previous examples is offered for illustration. Do not include these in the actual booklet.
5. Multiple verbs occur in an underlying problem when more than one key action verb is used; the word **and** in an underlying problem should be a red flag to students and evaluators.
   - *IWWMW decrease tourism and reduce pollution on the continent of Antarctica…?*

Some multiple underlying problems occur, however, because of the existence of multiple objects in combination with a single verb in the key verb phrase. Examples of this are:

- *HMW reduce child abuse and drug abuse…?*
- *HMW provide economic and counseling opportunities…*?
- *HMW distribute food and jobs…?*

Note: If an underlying problem contains a multiple key verb phrase or purpose, evaluators are instructed to refer only to the first verb in the underlying problem when scoring focus and adequacy and to score low in focus in Step 2. In Step 3, however, solution ideas must be relevant to everything mentioned in the underlying problem to score as relevant solution ideas.

Step 2 – *Suggestions*

1. Selection of the underlying problem is a critical step in the FPS process. The ***Four I's*** represent areas for a students to consider as they thoughtfully make their decision about the underlying problem. When discussing which of the many and varied Step 1 challenges to attack (solve) in Step 2, teams/individuals should ask themselves these questions, referred to as the Four I's:
    a. ***Impact*** - Which challenge, if solved, would have the greatest impact on the future scene?
    b. ***Influence*** - Which challenge can the team/individual have the most influence on because of their knowledge of the topic?
    c. ***Interest*** - Which challenge generates the most interest and enthusiasm?
    d. ***Imagination*** - Which challenge seems most likely to inspire student's imaginations so they can come up with creative, futuristic solution ideas?
2. When determining an underlying problem, remember the following tips:
    a. Select a Step 1 challenge or category of challenges you feel is a very important aspect of the future scene and a challenge you wish to solve.
    b. State the condition that indicates the reason the challenge is chosen from Step 1. (The condition phrase defines the specific part or parts of the future scene or related research that serve as the catalyst for the area of concern you choose to solve.)
    c. Choose a singular, active, key verb phrase that clearly mandates what you must do in Step 3 to solve this challenge.
    d. Add one purpose that gives a specific goal (outcome) to your key verb phrase mandate.
    e. Avoid using the words *and, or,* and *while* in your underlying problem. This will reduce your chance of a multiple key verb phrase and/or multiple purpose.
    f. Include those elements that place your underlying problem within the parameters of the future scene.
    g. Be as concise as possible. Read it aloud, and ask the following questions: Is it clear? Does it make sense to you?
    h. Avoid an underlying problem that restates, broadens, and/or does not identify a challenge from the future scene.
    i. Be very cautious when using an absolute verb. An evaluator must find it appropriate in the context of the particular future scene being used.
3. It is recommended that a challenge area chosen for the underlying problem allows the team or individual to utilize research. Some students choose underlying problems that are appropriate because they arose from legitimate challenges identified in Step 1 but have very little to do with the topic area, the future scene, or the research.
    - The two most frequent examples of this are: "How might we convince the public we must solve problem *X*?" and "How might we raise funds to solve problem *X*?" Both of these areas are legitimate concerns in dealing with most future scenes. The FPS process allows you to focus on either one of these in the underlying problem (UP). The difficulty that results is that the rest of your booklet will be concerned with *convincing* or *fund-raising* and not with the specific FPS topic. You won't utilize your research or any information discussed in preparing for completion of the booklet.

- It is recommended you keep this in mind when selecting your UP and try to select a challenge or category of challenges which will maximize utilization of your knowledge on the topic area, as well as focus on important issues in the future scene.

4. The use of an absolute verb in the KVP, such as stop, prevent, and eliminate, may unnecessarily narrow the focus, thus reducing the points awarded. However, there are times when an absolute verb is appropriate. Evaluators will determine the degree to which an absolute verb is appropriate or is too narrow and will award points accordingly. For example, "prevent drug abuse" is narrower than "reduce drug abuse." The context of the future scene will help the evaluator determine if "prevent" is appropriate or too narrow. An absolute verb should have no impact on the adequacy score, which is about the importance of the issue selected.
5. Words should be chosen carefully so the goals stated in your KVP and purpose are clear and measurable. Phrases such as *improve the quality of life* or *successful life* have different meanings to each evaluator. The evaluator may have a difficult time determining if vague solution ideas can be achieved.
6. The purpose should be one that clearly results from achieving the goal stated in the key verb phrase. It should be more than a rephrasing of the KVP. A purpose that restates the condition phrase or restates the verb phrase scores 1-3 in focus.
7. The underlying problem should be narrow enough to focus attention on a challenge and broad enough to generate many different solution ideas.
8. The underlying problem should be an important or significant problem area within the future scene.

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. The goal is 16 (8 for individuals) elaborated solution ideas.

Step 3 – *Essentials*

1. Solution ideas must be relevant to both the key verb phrase and the purpose to be scored relevant; they also must occur within the confines of the future scene parameters (FSP). More specifically, a solution idea must answer the key verb phrase **and** have an implied or stated connection to the purpose to be considered relevant.
   Note: If there is no purpose in the UP, the evaluator must interpret the purpose by imposing a purpose logical to the future scene.
2. For team problem solving, each team member should have the same goal in mind before generating solution ideas. Teams and individuals should keep a copy of the underlying problem in front of them as they go through the remaining steps so they will remember exactly what they are trying to accomplish.

Step 3 – *Suggestions*

1. Fluency and flexibility can be expanded by using the FPS category list and brainstorming tools such as force fitting, SCAMPER, morphological matrix, and other Creative Problem Solving tools for generating solution ideas (See *Coach's Handbook*, "Basic Skills & Tools".).
2. Step 3 solution ideas are stated as definite proposals, "We will do idea *X*." While Step 1 challenges are stated in terms of possibility, solution ideas should not be stated in terms of possibility.
3. Elaboration credit is awarded to solution ideas that contain pertinent details: ***who, what, how,*** and ***why*** (A pronoun such as we, they, he, she, etc. is not sufficient to count as "who."). 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 2025 in Antarctica" is not of a substantive nature.)
   - ***Who*** indicates who or what person/group will implement the solution.
   - ***What*** indicates the solution idea.
   - ***How*** describes how the solution idea will work.

- ***Why*** indicates why the solution idea will solve the UP (KVP & purpose), **or** what you will accomplish by implementing the solution idea.
- ***Where*** describes specific relevant places necessary for the solution idea to occur.
- ***When*** designates a timeline, a specific date for completion, timeframes for specific ideas to occur, etc.

4. Formula writing should be avoided in writing of solutions. Repeating the key verb phrase and purpose does not illustrate how or why the solution would be implemented.
5. The actual *who* in solution idea should be the *who* 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 the *what.* A lot of parents don't talk to their children about school, so something needs to happen to start them talking. A *who* for elaboration in this case would suggest the person or people to do that, maybe the school guidance counselor or the PTA.
6. Listed below are several solution ideas for solving the UP, *Because tourists are causing damage, how might we discourage the tourists who visit Antarctica in 2025 from taking rock samples from Antarctica home with them so they do not destroy Antarctica's natural environment?*
    a. The following solution idea relates to the key verb phrase and purpose of the underlying problem.
        - *Delta will charge an extremely high fee for tourists who want to carry rock samples from Antarctica back on the plane with them. Thus the tourists will be discouraged from taking rock samples because they won't want to pay to take them home with them, and Antarctica's natural environment will be preserved.*

    b. This example tells *who* will do *what* so the solution idea will solve the UP. It also tells *how* the plan works and *why* or *how* it achieves the purpose.
        - *In 2025, General Electric will invent a robot to guard rock formations in Antarctica so tourists will be discouraged from taking the rocks home with them. Therefore, Antarctica's natural environment will remain in its natural place.*

    c. This last solution idea explains the KVP and purpose in the UP, but **it does not explain how** the solution idea will work.
        - *In 2025, tourists will take animals from Antarctica home with them instead of rock samples. This will protect Antarctica's natural environment.*

Note: Imaginative inventions are fun, but they must include how or why explanations. Creativity and the futuristic element are essential in this step, but an invention can't happen just because someone says it will. Knowledge and research should be utilized to bring new approaches to existing ideas. In order to be relevant, an explanation of HOW the invention will accomplish its function should be included.

STEP 4 - GENERATE and SELECT CRITERIA

The key objective in Step 4 is to generate ideas/criteria that serve as yardsticks to determine the creative potential and importance of solution ideas. Criteria will measure the comparative quality (relevance and/or validity) of solution ideas.

Step 4 – *Essentials of Writing Criteria*

1. Only one concern/dimension is considered with each criterion.
    a. Consider what you are measuring? (Cost, acceptance, etc.)
    b. Avoid the use of "<u>and</u>" in a criterion.
2. Superlatives, *"st"* words (e.g. least, most, greatest, fewest, etc.), are written into each criterion.
    a. *Which solution idea is the easie<u>st</u> to implement?*
    b. *Which solution idea provides the greate<u>st</u> social benefit?*
3. Criterion is phrased to indicate a desired direction.
    a. In other words, ask, "*Which solution idea is the <u>easiest</u> to implement?"* instead of, "*Which solution idea is the hardest to implement?"*

b. Ask, *"Which solution idea provides the greatest social benefit?"* instead of, *"Which solution idea provides the greatest social harm?"*

GLOSSARY

Quite a few terms have been used to describe criteria, sometimes with completely different meanings depending on who is using the term. Here is a list of the terms and definitions we will be using for international evaluation.

1. Relevance
   - ***Relevant***: A criterion appropriate for evaluating solutions to this underlying problem
   - ***Not Relevant***: A criterion not appropriate for evaluating solutions to this underlying problem
2. Types of Criteria:
   - ***UP-Based: KVP or UP-Based: Purpose***: A criterion based on the ideas from the underlying problem, either from the key verb phrase or from the purpose
   - ***Generic***: A criterion whose core idea can be applied to nearly every solution to nearly every underlying problem for nearly every topic - (***A generic criterion does NOT become specific by adding future scene information to it.)***
   - ***Specific***: A criterion whose core idea can only be applied more narrowly to this underlying problem and/or for this topic or for other closely related topics, but not to a wide variety of areas. (Specific criterion may be based on the research for a topic.) *A specific criterion does NOT need to have future scene information in it; however, it is hard to tell if a criterion is generic or specific without modifying information.*
3. "Flavors" for Generic and Specific Types:
   - ***Plain***: A criterion with no details or information coming directly from the future scene
   - ***Modified***: A criterion with adequate details, such as important stakeholders, to place it firmly within this underlying problem and/or future scene
     (Parameters alone - time, place, topic – should not be considered modified.)
   - ***Justified***: A criterion that gives a condition from the future scene as a rationale for its use. (The justification must have a logical connection to the criterion.)

****International Terms**: **As shortcuts, the terms generic, modified, and advanced will be used to designate 1, 2, or 3 points.** There are multiple ways to earn 3 points, all part of the "advanced" group of criteria. Note that ALL specific criteria receive 3 points, but generic criteria must be "justified" in order to receive 3 points. If a justification does not come directly from the future scene or have a logical connection to the criterion, the justification is ignored and the criterion is scored on its own.

Evaluation Shortcut Terms	Type & Flavor	Points
NR - Not relevant	Not relevant	0
G – Generic	Plain Generic	1
M – Modified	Modified Generic	2
A – Advanced	Justified Generic	3
A – Advanced	UP-Based: KVP	3
A – Advanced	UP-Based: Purpose	3
A – Advanced	Plain Specific	3
A – Advanced	Modified Specific	3
A – Advanced	Justified Specific	3

STEP 5 - APPLY CRITERIA to SOLUTION IDEAS

Determine which solution would make the best action plan. Applying the criteria to your solution ideas is an important focusing tool. Use a grid to apply five criteria to the eight most promising solution ideas in order to determine the best action plan.

Step 5 – *Essentials*

1. Select your 8 (5 for individuals) most promising solution ideas and list them in the 8 solution idea blanks of the grid. If you have 8 or fewer, list them all.
2. Based on each criterion, rank order your solution ideas from 8 (best) to 1 (least effective) – 5 to 1 for individuals. Make sure you use each number between 8 (5) and 1 only once, in each vertical column. If two solution ideas tie, you can add the next two ranks and divide by two. (i.e. 6 + 7 = 13 , divide by 2 for ranks of 6.5)
3. Add across the grid to total the ranks given to each solution idea. Double-check your addition for the totals in the grid to make certain you did not make a mathematical error. The solution idea with the highest total rank is the solution idea used to develop your action plan.

Step 5 – *Suggestions*

1. Enter only a few key words for each solution - just enough to jog the memory; the number of each solution idea (from Step 3) can be provided to give the evaluator easy reference to the complete wording of that solution idea.
2. In ranking each solution idea against a criterion, it may be easier to determine the best solution idea and then the least effective solution idea (8 and 1, 7 and 2) or for individuals (5 and 1, 4 and 2) alternating back and forth, rather than trying to identify the best, next best, etc. (8, 7…). If less than 16 or 8 solution ideas are generated in Step 3, the solution ideas can be ranked based on the number you actually have, such as 7 (best), 6,5… etc.
3. If one criterion is more important than the others, its value can be increased to give it more "weight." Weighting 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.
4. Addition for the totals in the grid should be double-checked to make certain no mathematical error have occurred.
5. The grid should not be manipulated. It is inappropriate to assign the same rank to each solution idea for every criterion. It is unusual for each solution idea to receive the same rank from five different criteria.
6. If after completing the grid two or more solution ideas tied for the action plan, the tie should be broken. Methods for breaking the tie include the following: introduce a sixth criterion, go back and weight one or more criteria, eliminate all other solution ideas and have a head-to-head playoff between the tied solution ideas (using your original five criteria). A note to the evaluator could explain how the tie is broken.

STEP 6 - DEVELOP AN ACTION PLAN

The key objective of Step 6 is to develop the highest ranking solution idea into an action plan. This is the chance to develop and explain the details of how the plan will solve the underlying problem and positively impact the future scene.

Step 6 – *Essentials*

The solution idea which receives the highest total in the grid is the final action plan - no ifs, ands, or buts! This solution idea must be the primary focus of the Step 6 proposal. If the highest scoring solution idea does not represent a good or logical plan, it is usually due to one of three reasons:

1. The criteria are not adequate;
2. The rank-ordering of solution ideas in the grid needs work; or
3. The favorite solution idea of the team or individual is being mistaken for the best action plan.

Step 6 – *Suggestions*

GLOBAL ISSUES PROBLEM SOLVING KEY TIPS
Team and Individual

1. The action plan should relate back to the underlying problem. The action plan should demonstrate how the key verb phrase and purpose of the underlying problem will be achieved. The action plan represents the proposal for solving the problem identified in Step 2.
2. The *who, what, how, why, where* and *when* of the action plan should be provided.
    - ***Who*** *will carry out the plan or be involved?*
    - ***What*** *will be done to solve the problem - when will results begin - will it continue?*
    - ***Where*** *will the plan be implemented?*
    - ***Why*** *will this positively impact society?*
    - ***How*** *will the action plan be carried out?*
    - ***How*** *does it positively impact the UP?*
    - ***How*** *does it positively impact the future scene?*
    - ***How*** *does it positively impact the topic?*
3. New facets may be added to the action plan at this point as long as each addition represents a subpart of the action plan. Combining the two highest scoring solution ideas is not recommended, unless the second highest scoring solution idea fulfills the first sentence in this paragraph – it usually doesn't.
4. At least three complete paragraphs should be developed in an action plan.
    - Think of your solution idea as an overview of your plan.
    - Fully develop and elaborate the action plan.
    - Expand the solution idea by telling why and how the plan solves the underlying problem.
    - Tell who will be supporters of the action plan and who the resisters will be.
    - Describe any obstacles to overcome in implementing the action plan.
    - Explain why and how this plan has a positive impact on the future scene, topic, and society.

Reminders:

1. Be persuasive – sell your idea!
2. Tie the action plan back to the UP, the future scene, and the topic.

OVERALL

Evaluators assess the team's/individual's application of research, futuristic thinking, and creative strength in the overall section of the FPS scoresheet. Skillful use of the problem solving process is also indicative of creative thinking. Futuristic thinking assesses the team's/individual's ability to do the following:

1. Put themselves in the time frame of the future scene, and
2. Extrapolate relevant trends/technologies from their research as they identify futuristic problems and develop creative, workable, futuristic solution ideas.

The booklet should demonstrate an understanding of how the topic, challenges, and/or solution ideas would impact future society.

CATEGORY LIST

Use these categories to broaden your scope in generating challenges and solution ideas.

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

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ANTARCTICA

Sample FPS Future Scene – 1994

As you stepped onto the huge ecotour ship, you knew you were taking the trip of your lives. Now, thinking back, you recall some of the captain's early-morning messages.

GLOBAL ISSUES PROBLEM SOLVING KEY TIPS
Team and Individual

Sunday, October 31, 2025
"Welcome aboard the "Ellsworth Clipper!" As we leave New York Harbor, I'll remind you we'll reach the Antarctic Peninsula directly below the tip of South America in about two weeks. I'm delighted to see your excitement about our ecotour. You will assist in research in marine biology, geology, the atmosphere and ecology. You will also serve as ecowatchers: Take careful notes of anything you believe could threaten Antarctica. By the way, you'll be interested in a news bulletin we just received: All nations have signed an agreement banning mining and military operations in Antarctica for the rest of this century. As an added feature of our tour, we'll have evening enrichment programs to prepare you for your activities when we reach the continent. Tonight's program will be: 'Antarctica-The Earth's Thermostat.'"

Wednesday, November 17, 2025
"Attention, all passengers: We are approaching the Antarctic Peninsula. Grab your holocorders and look starboard for some of the most vividly colored icebergs you will ever see. The deep, glowing blues and jade greens indicate these majestic travelers have been at sea a long time. The patches of black are groups of penguins. During the next week, we'll sail down the coast of the Peninsula and make our first landfall at Faraday, one of 20 science bases in this area. This morning, we will stop near the area where the tourist ship, "Snobird," developed a leak in its fuel tanks. As you recall, cleanup of the oil is taking months. This is where some of you will help us take samples of seawater to measure levels of phytoplankton. Tonight's enrichment program is: 'From Seals to Seabirds: A Look at Some of the Polar Natives.'"

Monday, November 23, 2025
"Good morning, shipmates! During the night, we anchored off Faraday. At 10 a.m., we will begin transporting you aboard our Zodiac IIs to land. Please go over the checklist of items you will need. Remember, a summer day here still means below-freezing temperatures. Also, the safety of the area we will visit is very important. Bring back everything you take - don't leave even an MVP wrapper! You will be working with scientists at Faraday. Please be careful of the scientific instruments; simply leaving a door open can ruin months of experiments. Tonight's enrichment program is: 'Antarctica as Natural Laboratory - The Last (Almost) Pristine Place on Earth.'"

Tuesday, December 1, 2025
"I hope you're enjoying our ecotour. Today you're in for a contrast: we're going to visit a different kind of polar tourism. Two years ago, the countries of the Antarctic Treaty voted to end all land claims on the continent. Shortly after that and to loud protests, a group of business people with no ties to the Treaty staked a land claim and built a large resort area on the Peninsula. Let me read one of their tour ads to you: 'Fly to Antipodal Paradise. Travel along Amundsen's trail to the South Pole in the comfort of hovertrains. Ski and ice bike at the bottom of the world! We'll equip you with a picnic lunch and a geology hammer, so you can gather your own rock sample souvenirs!' Quite different, isn't it? Following your visit, tonight's program will be: 'Governing Antarctica: How and Who? '"

Tomorrow, the "Ellsworth Clipper" *leaves Antarctica to return to New York Harbor. On the return trip, it will be your turn to present an enrichment program on what you see as one of the major areas of concern about Antarctica. You have attended the enrichment programs on the topics given above, and programs on many other topics, as well. Use your knowledge and problem solving skills to examine the challenges faced by Antarctica and develop an action plan.*

Evaluation Criteria
Future Problem Solving Program International

Identify Challenges (Step 1)

Fluency 1 2 3 4 5 6 7 8 9 10

Flexibility 1 2 3 4 5 6 7 8 9 10
Clarity 1 2 3 4 5 6 7 8 9 10
Originality 3 x _____ = _____

Select an Underlying Problem (Step 2)

Condition Phrase 0 1 2
Stem & KVP 0 1 2 3
Purpose 0 1 2 3
Future Scene Parameters 0 1 2
Focus 1 2 3 4 5 6 7 8 9 10
Adequacy 1 2 3 4 5 6 7 8 9 10

Produce Solution Ideas (Step 3)

Fluency 1 2 3 4 5 6 7 8 9 10
Elaboration 1 2 3 4 5 6 7 8 9 10
Flexibility 1 2 3 4 5 6 7 8 9 10
Originality ..... 3 x _____ = _____

Select and Apply Criteria (Steps 4 & 5)

Correctly Written 0 1 2 3 4 5
Applicability and Relevance 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
Correctly Used 1 2 3 4 5

Develop an Action Plan (Step 6)

Relevance 1 2 3 4 5
Effectiveness 1 2 3 4 5
Impact 1 2 3 4 5
Humaneness 1 2 3 4 5
Development of Action Plan 1 2 3 4 5 6 7 8 9 10

Overall

Research Applied 1 2 3 4 5 6 7 8 9 10
Creative Strength 1 2 3 4 5 6 7 8 9 10
Futuristic Thinking 1 2 3 4 5 6 7 8 9 10