

BEST PRACTICES FOR GIPS EVALUATION

USE WITH EVALUATION GUIDELINES
ADOPTED JUNE 2022
FIRST USE AT IC 2024

For each step of the problem solving process, evaluators use the descriptions provided on the score sheet, or from the official Evaluation Guidelines. The information and examples contained within this document are designed to supplement the score sheet and Guidelines.



EVALUATION FUNDAMENTALS

PHILOSOPHY OF EVALUATION

GIPS winners are those that exhibit the best creative problem solving skills in response to the Future Scene. More specifically, evaluators look for top-quality work in three areas:

1. Use of the problem solving process
2. Applying relevant research to a specific Future Scene
3. Spontaneous response to specifics of the IC Future Scene

The primary purpose of Global Issues Problem Solving (GIPS) evaluation is to provide feedback that promotes the development and improvement of problem solving skills. GIPS evaluation is performance-based and designed to provide an authentic assessment of the booklet. Because there is no single “right” answer, FPSPI employs various of strategies to review work, using specific criteria to evaluate performance in each Step of the process. Skill improvement remains the most important aspect of evaluation; however, since GIPS also involves competition a secondary purpose of evaluation is to provide a fair, consistent, and reliable method for comparing booklets in a GIPS competition.

In Future Problem Solving points are awarded for student work submitted. We encourage our students to submit information even if it is incomplete. The only time that zero points are awarded for a step is if no student work was submitted.

EVALUATOR CHARACTERISTICS

Proper Perspective

FPS participants can easily convince evaluators that they are sophisticated and advanced thinkers; therefore, evaluators may have elevated expectations and be highly critical of weaker booklets. It is essential that evaluators maintain a positive attitude throughout the evaluation process. Students’ work will delight, sometimes frustrate, and ultimately reward the evaluator.

BEST PRACTICES FOR GLOBAL ISSUES PROBLEM SOLVING EVALUATION

- Remember that even the weakest booklet required a great amount of thought, creativity, and effort. It is possibly more demanding than anything else the students have completed as part of their educational experience.
- Evaluator feedback must take into account the age/division of students.
- A positive attitude from the evaluator encourages growth and development from students performing at all skill levels.
- The central purpose of FPSPI is to assist students in acquiring better thinking, communication, and problem solving skills. Evaluation is always done with this thought in mind.
- Evaluators should offer feedback in a positive manner making students want to improve.

Preparation

Before evaluating booklets for any topic, evaluators should have knowledge of the topic. The students deserve to have their work reviewed by conscientious evaluators, who have a reasonable understanding of the concepts involved in the Future Scene.

- If a basic understanding of the topic is not present, evaluations lose credibility.
- Review the research materials provided by the evaluation coordinator at minimum to gain topic awareness before evaluating.
- Read, discuss, and contemplate the ideas presented in the Future Scene, before viewing student work.
- Consider the Evaluation Notes for each Future Scene, and any other guidance provided by the Evaluation Coordinator before beginning evaluations.

Consistency

No matter the level of competition, the rules should be applied consistently. For example, the process to score a Relevant Challenge does not change over the course of the year. It is the topic, Future Scene, and quality of student work that varies, not the application of the rules. Different topics (Competitive or Non-Competitive) and different rounds within a topic, have different expectations in terms of feedback and the amount of time for evaluating booklets. It is important to follow the specific instructions from the Evaluation Coordinator for each round of competition.

SCORING PROCESS

GIPS evaluation examines student skills in three categories:

- **Content:** These criteria measure the *quality of the content* in students' work. Content-oriented criteria evaluate the *merit of the ideas*.
- **Structure:** Structure-oriented criteria assess how effectively students fit their work into a prescribed format, measuring a student's mechanics in completing their booklet.
- **Process:** These criteria judge how well students use the problem solving process.

Throughout the evaluation process, evaluators use the descriptors on the score sheet to determine numerical scores. Many of these descriptors are contained within rubrics.

Using a Rubric: To correctly use a rubric begin with the middle scores and determine if the work meets the explanation of that score.

- a. If it does, move up to the next highest score on the rubric, read the description, and determine if the work meets that explanation. If the work meets the higher descriptor, move to the next higher score and read that explanation. If that descriptor does not fit, assign the lower score.
- b. If it does not, go back down and assign the appropriate score.
- c. If the middle descriptor does not fit, the process is the same as you move in the opposite direction and keep moving down until the explanation fits your opinion of the work.

NOTES:

- The rubrics are used to assess student work. Unless a score of zero is denoted in the rules, the rubrics generally do not contain a zero.
- You must assign the score of the highest matching descriptor.

FEEDBACK

Feedback helps students understand the strengths and weaknesses of their booklet and motivates them to improve their skills. Feedback is ***the most important aspect of the evaluation*** and is given for each Step of the GIPS booklet. Feedback enables students to focus their learning process and allows the coach to adapt problem solving instruction to meet the needs of the students. Space for comments, both general in nature and specific to a single response, are provided on the score sheet.

When providing feedback, it is important to utilize appropriate strategies, both to communicate information and encourage improvement. FPSPI promotes using a number of feedback strategies as supported by the research of Edward de Bono (1974).

Praise: Evaluator acknowledgments of effort, creativity, and major strengths

- Reinforces positive aspects of student work
- Reminds the students, even if the score is not high, they did some things right and encourages them to improve
- Establishes a good working relationship between the evaluator and the students

Clarification: Evaluator comments asking students to clarify ideas

- Points out statements that may be confusing or unclear and proposes alternate language
- Promotes the development of effective communication skills

Criticism (Ideas for Improvement): Evaluator suggestions for areas needing improvement

- Helps students build skills through specific, constructive comments
- Gives students examples of ways to use their ideas, research, or the problem solving process more effectively
- Encourages teams/individuals to learn from their work to become better problem solvers

Amplification: Evaluator encouragement for students to expand ideas, push thinking further, and improve the quality of their problem solving

- Points out gaps in information or logic
- Identifies other ideas that might have been considered
- Prompts students to consider the possible consequences of their ideas

Regardless of the quality of the student work, effective feedback praises students for what they did well and encourages them to use their improved skills to tackle the next problem. Negative feedback may discourage students and keep them from participating, defeating the purpose of the program. Feedback must be given in a manner that has a positive impact on students and coaches. The following are strategies for evaluators to make their point while keeping students proud of their effort and excited about future work.

Feedback Sandwich

Start and end with positive comments. Criticism is better received when it is surrounded by praise.

- The key to the technique is to provide *legitimate* praise. “Fun Solutions to read! Show how your ideas relate to your UP. You’re off to a great start!”. When these two comments are combined there is clear praise of students’ efforts and an indication of how to improve.

- The feedback sandwich is too much for individual Challenges and Solutions, but it is great for summarizing each Step. Remember, a positive start and finish motivates students for their next submission.

Thoughtful Word Choice

Just as a student's word choice impacts how effectively their efforts are communicated, your word choice impacts how well students will receive and respond to your feedback.

- Substitute "when" or "and" for the word "but." Explain to students, "You have some terrific ideas *when* you relate them to the topic and your Purpose." This comment is far more positive than "You have some terrific ideas, but you don't relate them to the topic."
- Use a question to encourage students to rethink an idea. Asking "What in your research suggests this will happen?" puts the responsibility of explanation back on the student and encourages thought on their part. Writing a comment telling students that their reasoning is faulty doesn't help them improve and can be hurtful.

Limited Criticism

People can only respond to a certain amount of criticism, even if it is in the form of a feedback sandwich.

- Students who need improvement in several areas may only be able to handle a few suggestions at a time.
- Evaluators should determine the one or two areas that need the most improvement and focus feedback on them. If a student improves in one major area many of the smaller problems in the booklet may be eliminated as well.

Evaluator Expectations

None of the suggested techniques for providing effective feedback should be misinterpreted as saying that you should set low expectations. In fact, the opposite is true. FPS students will continually amaze you with their breadth of knowledge, creativity, and insight. Furthermore, high expectations often produce better results. Evaluators should set their expectations high and remember that students with limited life experience and great potential for growth can write sophisticated FPS booklets. Set your expectations realistically high, offer feedback in a positive manner, and encourage students to reach their full potential.

Score Sheet Descriptors

Identify the descriptors from the rubrics that contributed to your score, and incorporate them into your comments. This helps students follow your train of thought in determining their score. Following the rubric improves consistency among evaluators and ensures that the message students receive about their work and how to improve it, clearly corresponds to their efforts.

Comments for each Step

Booklets that are written earlier in the year often require more extensive comments, as students likely have less experience with the problem solving process. During Practice Problems it is a good idea for evaluators to provide a comment for each line item not accepted, in addition to general step comments.

- Line item comments should offer insight to as to why the Challenge/Solution/Criteria was not accepted.
- General step comments should focus on the single aspect of the step that they did best, or the element of the step that if improved would make the biggest difference for the next booklet.
- Upon completing the evaluation of each Step, an evaluator should write specific comments to promote improvement.

- Although limited space allows only brief observations, the comments are extremely important.

AVOID Negativity	USE Praise, Clarification, Improvement Ideas, Amplification
Poorly written	<ul style="list-style-type: none"> • I was not sure what you meant. • Show how this fits into the Future Scene. • Add details to let us know more about how this will work.
Trivial issue	<ul style="list-style-type: none"> • This issue is not related to the FS. Focusing on ... or ... would have more impact on the situation.
Disorganized Action Plan	<ul style="list-style-type: none"> • Consider writing your Action Plan as an instruction manual for someone else to implement your ideas. • Try giving a Step-by-Step plan. • Tell us what needs to happen first, then next, etc.
Impossible	<ul style="list-style-type: none"> • How would this work?
Incomplete UP	<ul style="list-style-type: none"> • Try assigning a team member to remember each part of the UP
Wrong information	<ul style="list-style-type: none"> • Be sure to reference information in the Future Scene accurately.

This is the evaluator’s chance to encourage the students and give them pointers to improve their problem solving skills. The evaluator’s insights make the final impression.

THE FUTURE SCENE



Student work must relate to the Future Scene, a hypothetical “what-if” scenario based on current information 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. GIPS is designed for students to build upon the creative elements of the Future Scene and showcase their own creativity.

Typically non-competitive Future Scenes are more open-ended and allow students to develop and enhance their creative and critical thinking and problem solving skills. These Future Scenes are often examined by students over time, with instruction and/or guidance from their coach. For these problems, emphasis is placed on learning the problem solving process, and evaluators often provide extensive feedback to help students hone their skills.

The Qualifying Problem, Affiliate Bowl, and the International Conference Future Scenes are competitive, and less emphasis is placed on teaching the problem solving process and more on its application to the Future Scene. For these competitions, students do not see the Future Scene until the two-hour competition begins. No research is allowed during this two-hour competition. Competitive Future Scenes are narrower and 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. This helps evaluators distinguish between those who memorize from those who think.

Evaluators should reward students for responding directly to the Future Scene, recognizing those 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.

For example, in the Future Scene on the topic of drugs, the FS detailed a virtual reality program with drug-like effects instead of describing traditional addictions and the effects of drugs on society. Using a virtual reality program as the basis of the FS required students to use only their background knowledge on the effects of drugs rather than their knowledge of drugs as a whole.



FLEXIBLE THINKING

Use these categories in evaluating Flexibility in Step 1 Challenges and Step 3 Solution ideas.

Student Objective: Demonstrate a varied approach to the Future Scene and the entire problem solving process, allowing for a more complete picture of the whole situation.

Evaluators are encouraged to assign categories liberally – if a response can fit into more than one category, use one that has not already been awarded. One point can be awarded for each unique category, up to the total number of Challenges or Solutions submitted in Steps 1 and 3.

- | | | |
|------------------------|---------------------------|--------------------------|
| 1. Arts & Aesthetics | 8. Education | 15. Physical Health |
| 2. Basic Needs | 9. Environment | 16. Psychological Health |
| 3. Business & Commerce | 10. Ethics & Morality | 17. Recreation |
| 4. Communication | 11. Government & Politics | 18. Science |
| 5. Culture & Religion | 12. Law & Justice | 19. Social Relationships |
| 6. Defense | 13. Miscellaneous 1 | 20. Technology |
| 7. Economics | 14. Miscellaneous 2 | 21. Transportation |

- Miscellaneous 1 and 2 count as distinct categories and are used for those challenges/solutions that do not seem to fit anywhere else.
- Categories containing two related ideas such as Law and Justice are considered one category.

Below are general descriptions of the categories. This is by no means an exhaustive explanation of them, but rather is designed to assist students understanding a range of concepts when generating ideas.

- **Arts** include expression via music, painting, sculpture, theatre, film, or other creative media. **Aesthetics** focuses upon beauty and whether something is pleasant to view or experience.
- **Basic Needs** include food, clothing and shelter—elements important for survival.
- **Business** includes retail stores, restaurants, offices, corporations, etc. **Commerce** focuses upon the
- **Government** deals with how a community or country is managed. **Politics** involves elections and/or the activities related to making governmental decisions, especially debates or conflicts among individuals or parties having or hoping to achieve power.
- **Law** includes the creation and enforcement of recognized laws, court procedures, sentencing, and personnel. **Justice** is the seeking of fairness and reasonable implementation of laws.

trade or the buying and selling of goods and services.

- **Communication** deals with the exchange of information.
- **Culture** includes the customs, arts, social institutions, and achievements of a particular group. **Religion** includes a system of faith or worship.
- **Defense** involves protection, safety, security, and/or privacy. This includes physical efforts by individuals, or groups as well as protection provided by firewalls and passwords.
- **Economics** is the branch of knowledge that concerns the distribution, production, and consumption of wealth.
- **Education** includes schools, training, instruction, and learning.
- **Environment** includes one's surroundings or conditions that shape the lives of people, plants, or animals.
- **Ethics** include the principles that govern a person's behavior. **Morality** involves principles concerning the distinction between right and wrong.

- **Miscellaneous 1** is assigned when an idea does not fit within another defined category within that step. It will count as an additional category for scoring purposes.
- **Miscellaneous 2** is assigned when an idea does not fit within another defined category and is also unrelated to the idea assigned to Miscellaneous 1 within that step. It will count as an additional category for scoring purposes.
- **Physical Health** deals with the condition and care of the body as opposed to the mind.
- **Psychological Health** focuses upon emotional and mental well-being.
- **Recreation** includes hobbies, sports, entertainment, and other activities pursued during leisure time.
- **Science** is the systematic study of the structure and behavior of the physical and natural world (including the wider universe) through observation and experiment.
- **Social Relationships** encompass the connections between individuals with recurring interactions.
- **Technology** is associated with machines, equipment, and/or certain advancements developed from applying practical or scientific knowledge.
- **Transportation** is concerned with the movement of individuals, groups, or goods from place to place.



FUNDAMENTAL CONCEPTS

Fundamental Concepts for FPS include Research, Creativity and Futurism. Steps 1, 3 and 6 will be evaluated on Research Applied, Creative Strength and Futuristic Thinking. The definition for these will remain the same in each step and will be presented here and not repeated for each step. Although the definition remains the same, the steps are evaluated independently. All work provided in each step, regardless of scoring, is considered for Fundamental Concepts.

Student Objective: To combine research, creativity, and futuristic thinking to effectively work from a Future Scene to a focused Action Plan using the problem solving process.

RESEARCH APPLIED measures the application of research in Challenges, Solutions and Action Plan. Steps 1, 3 and 6 are examined for connection to the research available on the topic, as well as knowledge of issues and trends in general as related to the Future Scene. Vocabulary terms, concepts, facts, and incidents from the research are all indications of research applied.

BEST PRACTICES FOR GLOBAL ISSUES PROBLEM SOLVING EVALUATION

	Developing	Very Good	Exemplary
RESEARCH APPLIED Uses appropriate research and shows knowledge of issues and trends as related to the Future Scene	Includes minimal or no evidence of research, terms, concepts, issues, and trends	Some evidence of relevant research, terms, concepts, issues, and trends	Integrates in-depth, relevant research, terms, concepts, issues, and trends
	1 2	3 4	5

CREATIVE STRENGTH measures the creative, productive thinking in evidence in Challenges, Solutions and Action Plan.

Steps 1, 3 and 6 are examined for innovative or unconventional thinking and for ideas indicating fresh insights and perceptions. Responses showing creativity are those requiring intellectual energy to make mental leaps beyond obvious or commonplace responses.

	Developing	Very Good	Exemplary
CREATIVE STRENGTH Skillfully uses productive, clever, and innovative thinking	Includes minimal evidence of creative thinking	Some evidence of creative thinking; goes beyond the norm at times	Integrates innovative and/or insightful ideas that go beyond the ordinary
	1 2	3 4	5

FUTURISTIC THINKING measures the students’ ability to address the time frame of the Future Scene within Challenges, Solutions and Action Plan and to extrapolate relevant trends and technologies from their research as they identify futuristic Challenges, and create workable, futuristic Solution ideas.

Steps 1, 3 and 6 are examined for thinking that shows evidence of futuristic trends or technologies. Each Step should show an understanding of how it could impact future society.

	Developing	Very Good	Exemplary
FUTURISTIC THINKING Utilizes knowledge of future trends and predictions as related to the Future Scene	Includes minimal or unrelated evidence of trends or technology	Some evidence of futuristic ideas; goes beyond the norms at times	Integrates purposeful, futuristic concepts, showing how ideas impact the future
	1 2	3 4	5



STEP 1 Identify Challenges

A Challenge is an issue, concern, or problem that *may* need attention or consideration. A Challenge is a logical cause or effect of the situations in the Future Scene that may have a chance of occurring. In addition, Challenges should be written as possibilities since the future is uncertain.

Student Objective: To identify varied challenge ideas from the Future Scene.

Scoring:

1. Challenges are scored for Fluency.
2. Relevant Challenges are assigned a category for Flexibility.
3. Relevant Challenges are considered for their degree of Clarity + Insight.
4. Relevant Challenges are considered for Originality.
5. The step as a whole is scored for Fundamental Concepts.

Well-written Challenges follow these guidelines:

- A. Challenges are written in statement form. (Questions are inappropriate for this Step.)
- B. Challenges are stated in terms of *possibility*, using non-absolute terms such as may, might, could, etc. (Absolute terms that indicate that “*x will be a challenge*” deny an important element of projecting into the future. 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.)
NOTE: Using “will” instead of “may” affects the Clarity score – not Fluency.
- C. Challenge must have a likelihood of **really** happening.
- D. A clearly written Challenge has logical cause-effect reasoning and demonstrates what the Challenge is, why it is a Challenge, and how it logically relates to the Future Scene.

1. **FLUENCY** measures the *quantity* of **Relevant** Challenge *ideas*. Each Challenge idea is classified in one of the following ways:

Relevant – a Challenge that has a possibility of existing within the context of the FS.

Maybe – a Challenge that needs more information to be considered Relevant.

Not Relevant – a Challenge that is not related to the FS.

Duplicate – a Challenge that is too contextually similar to another Relevant Challenge.

Solution – a response that offers a Solution to a concern from the FS.

Blank – no student response provided.

Relevant – The Challenge has a possibility of existing or occurring if the Future Scene were to occur. Each Relevant Challenge idea receives 1 point.

- The cause/effect relationship need **not** be clearly evident. (Cause-effect logic is examined in more detail under Clarity and Insight.)
- Challenges that merely restate a problem stated in the Future Scene are not awarded a **Relevant**.
- Relevant Challenges may be written in definite terms. Challenges not written using “may,” “might,” or similar language are considered for Relevancy only. (Not eligible for Clarity and Insight)
- A **Relevant** may be awarded for Challenges written at different levels of expertise. The focus is on the **idea**, not the sophistication of the writing or the cause and effect reasoning.

NOTE: If the Challenge is not Relevant, consider the other Fluency options (proceed to page 10). Any response that does not meet the criteria for Relevant is not scored for Flexibility, Clarity, Insight, or Originality.

Each **Relevant** Challenge is then considered for Flexibility.

2. **FLEXIBILITY** measures the *variety* of viewpoints considered in the **Relevant** Challenge ideas.

Considering the 21 categories, assign one category to the **Relevant** Challenge idea. Each unique category used in Step 1 will receive 1 point.

- Evaluators categorize the **Relevant** Challenge responses, using the categories listed on the score sheet and as presented above.
- Some Challenges can be categorized in more than one way. Evaluators are encouraged to assign a category that has not yet been awarded.

Each **Relevant** Challenge is then considered for Clarity.

3. **CLARITY** measures the quality of the writing **and** the cause-effect reasoning in the Challenges.

A Challenge with a clear and thorough description of the concern and logical cause-effect thinking demonstrates good Clarity, and receives 1 point.

- A clearly written Challenge shows effective communication skills.
- Challenge is written using statements of possibility.
- The cause-effect reasoning must be logical.

Clarity in Challenges - Cause-effect reasoning

Cause and effect is the relationship between two things when one thing makes something else happen. A Challenge embodies cause-effect reasoning when it looks at;

- A cause whose effect can be seen in the Future Scene
- Future Scene details as causes and determining what effects may occur

Understanding the causes and effects of situations is essential in learning the basic ways the world works. Part of the Clarity score is evaluating whether the cause-effect reasoning used in the Challenges is logical.

- Is the “effect” stated a likely outcome or does it stretch the imagination too much? (as in an attempt to gain Flexibility points)
- A “reciprocal” cause-effect relationship is a chain; a cause leads to an effect, which then goes on to cause another effect, and so on. Challenges with many links may become confusing and would not be awarded Clarity points.
- A cause-effect relationship that takes a “big leap” is probably missing parts of the chain and is not awarded Clarity points.

Each **Relevant** Challenge that receives **Clarity** is then considered for Insight.

INSIGHT measures depth of knowledge and shows understanding of challenge implications and receives 1 point.

- Ideas that offer thoughtful analysis.
- Ideas that are fully developed; contain definite consequences rather than vague or extreme statements such as “cause other problems” or “everyone will die.”
- Ideas that show depth of understanding beyond division expectations.
- Ideas that are elevated with robust understanding.
 - Using vocabulary specific to the Challenge
 - Anticipating questions, different viewpoints, or how facts are interpreted
 - Providing thorough and appropriate details
 - Demonstrating the incorporation of research to inspire challenge ideas identified from the Future Scene

A **Relevant** Challenge may be scored for Originality

4. **ORIGINALITY** rewards **Relevant** Challenge ideas that are especially insightful, highly creative, and/or unique. An Original Challenge is a response that is found infrequently among responses at that age/grade level and considered of high quality (insightful, indicative of breakthrough thinking). Each Original challenge idea receives 1 point, with no more than 5 permitted.

- Original ideas are those that go beyond the obvious and thus appear in less than 2% of Challenge ideas for that division.
- Challenges do not need to receive points for Clarity and Insight to be considered for Originality.

NOTE: Wildly futuristic ideas are not always original.

If the Challenge is not scored Relevant, consider the other Fluency options:

Maybe –Challenge idea needs targeted/specific information to be considered Relevant. Challenge is ambiguous or intent is not clear.

Not Relevant – Challenge is not related to the Future Scene.

Duplicate – Any Challenge too contextually similar to another accepted Challenge cannot receive additional credit.

BEST PRACTICES FOR GLOBAL ISSUES PROBLEM SOLVING EVALUATION

NOTE: Evaluators should not confuse duplicate ideas with duplicate categories as it is acceptable for students to list several different ideas in the same category.

Solution – A response that suggests **how** to solve a Challenge of the Future Scene is a Solution rather than a Challenge.

Blank – No student response is provided.

After scoring all Challenge ideas, consider the entire Step for Fundamental Concepts.

5. **FUNDAMENTAL CONCEPTS** – Step 1 as a whole is scored for Research Applied, Creative Strength, and Futuristic Thinking as noted.

NOTE: If no work is submitted for the step a score of 0 will be given for Research Applied, Creative Strength and Futuristic Thinking.

The Step 1 total score is determined by adding together all points awarded for each of the components as indicated on the score sheet.

		Team Booklet	Individual/MAGIC Booklet
Fluency	Up to 1 point per Challenge	0-16	0-8
Flexibility	Up to 1 point per Challenge	0-16	0-8
Clarity + Insight	Up to 2 points per Challenge	0-32	0-16
Originality	Up to 1 point per Challenge (max of 5)	0-5	0-5
Research Applied	Up to 5 points for the entire Step	1-5	1-5
Creative Strength	Up to 5 points for the entire Step	1-5	1-5
Futuristic Thinking	Up to 5 points for the entire Step	1-5	1-5

Evaluation of Common Errors in Challenges

- Challenges written in definite terms (such as will or would) may receive a Relevant score but should not be considered for Clarity or Insight.
- Challenge contains two or more possible Challenge ideas. Score the first Challenge idea for determining Relevance. In consideration of Clarity + Insight, all the information provided must be considered. It is unlikely that the combination of multiple ideas would warrant it receiving Clarity.

Examples

The examples used in this document are based on the 2020 Wearable Technology Future Scene (found at the end of this document). Familiarizing yourself with this Future Scene before completely reviewing this document will improve the effectiveness of examples.

Challenge Evaluation Examples

Example Challenge	Scoring		Rationale
	Fluency	Maybe	
1a The sensor to the Patel's kitchen door malfunctioned, even though they were supposed to receive an alert whenever the door opens due to AJ's Type 1 diabetes.	Flexibility	-	Restates a problem from the Future Scene.
	Clarity	-	
	Insight	-	

BEST PRACTICES FOR GLOBAL ISSUES PROBLEM SOLVING EVALUATION

1b The sensor to the Patel's kitchen door malfunctioned, even though they were supposed to receive an alert whenever the door opens due to AJ's Type 1 diabetes. If malfunctions like these occur often, it may lead to problems in the lives of families.	Fluency	Yes	Contains a definite cause and effect reasoning even though the relationship is vague.
	Flexibility	Technology	
	Clarity	Yes	
	Insight	No	
1c The sensor to the Patel's kitchen door malfunctions, even though they were supposed to receive an alert whenever the door opens due to AJ's Type 1 diabetes. If malfunctions like these occur often, AJ's diet may be unrestricted, leaving him open to illness from his diabetes.	Fluency	Relevant	Cause and effect relationship is strong and clearly stated even though details may be vague.
	Flexibility	Physical Health	
	Clarity	Yes	
	Insight	No	
1d The sensor to the Patel's kitchen door malfunctioned, even though they were supposed to receive an alert whenever the door opens due to AJ's Type 1 diabetes. If malfunctions like these occur often, AJ may suffer from untreated hyperglycemia, which may lead to diabetic coma or even death.	Fluency	Relevant	Cause and effect relationship is strong and clearly stated. Depth of understanding goes beyond division expectations and provides vocabulary specific to the Challenge.
	Flexibility	Physical Health	
	Clarity	Yes	
	Insight	Yes	
2a The implant tells Xander that his team is behind schedule. It offers suggestions for catching up.	Fluency	Maybe	Restates a fact from the Future Scene.
	Flexibility	-	
	Clarity	-	
	Insight	-	
2b The implant tells Xander that his team is behind schedule. It offers suggestions for catching up. This may be a problem because work interferes with one's free time.	Fluency	Relevant	Presents cause and effect reasoning that makes sense although generalized.
	Flexibility	Recreation	
	Clarity	Yes	
	Insight	No	
2c The implant tells Xander that his team is behind schedule. It offers suggestions for catching up. This may be a problem because if work interferes with one's private life, people may be constantly busy with work, leaving little time for recreation.	Fluency	Relevant	Cause and effect reasoning is clearly presented and closely connected. Indicates a knowledge of importance of recreation or "down time".
	Flexibility	Recreation	
	Clarity	Yes	
	Insight	Yes	
2d The implant tells Xander that his team is behind schedule. It offers suggestions for catching up. This may be a problem because if work interferes with his private life, Xander may be constantly busy with work, leaving little time or energy to satisfy the social-emotional needs of his children.	Fluency	Relevant	Cause and effect relationship present. Depth of understanding goes beyond division expectations and provides thorough and appropriate details that anticipate different viewpoints.
	Flexibility	Social Relations	
	Clarity	Yes	
	Insight	Yes	



STEP 2

Selecting an Underlying Problem

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

Student Objective: Develop an Underlying Problem, to be used for the remainder of the problem solving process, that (1) identifies a single goal based on addressing an issue from the Future Scene; and (2) a reason for accomplishing that goal.

Scoring: An Underlying Problem is scored in four areas:

1. Structure
2. Significance
3. Scope
4. Clarity

1. **STRUCTURE** assesses how effectively students fit their concepts into a prescribed format. This format is comprised of four elements:

- A. Condition Phrase
- B. Stem + Key Verb Phrase
- C. Purpose
- D. Future Scene Parameters

A. **Condition Phrase (CP)**

The Condition Phrase is a lead-in fact, logical extension, or research related to the Future Scene that is the reason why the Key Verb Phrase and Purpose were selected. The Condition Phrase may explicitly or implicitly refer to one Challenge or a group of Challenges but is not itself a Challenge.

- The Condition Phrase should not be repeated in either the KVP or the Purpose.
- The Condition Phrase provides the reason why the KVP and Purpose have been selected.
- Based on facts from the Future Scene or research related to the Future Scene

Scoring: (0, 2, 4, or 6 points)

- **0 points:** The Condition Phrase is missing.
- **2 points:** The Condition Phrase does not use accurate information from the Future Scene or research, or it does not relate to the Key Verb Phrase.
- **4 points:** The condition Phrase contains accurate information but does not provide rationale for selected KVP and Purpose.
- **6 points:** The Condition Phrase relates to the Key Verb Phrase and uses accurate information from the Future Scene and/or from research related to the Future Scene.

Using their own wearable devices AJ's parents monitor his glucose levels through access to his smart watch...

Condition Phrase (CP) Provides a rationale for the issue chosen for the UP	CP is missing	CP contains inaccurate or unrelated information	CP contains accurate information, but does not provide rationale for selected KVP and Purpose	CP contains accurate information logically establishing the UP
	0	2	4	6

B. Stem + Key Verb Phrase(KVP)

Together, the Stem and the Key Verb Phrase identifies a single goal based on addressing an issue from the Future Scene

Stem

- Introduction to KVP such as “How might we....” or “In what ways might we...” or other appropriate lead in phrase.

NOTE: If stem is not present, do not deduct any points but point out that it needs to be included.

Key Verb Phrase (KVP) – 0, 2, 4, 6 points

- The KVP uses a single action verb or verb phrase to identify the goal to address an issue from the Future Scene.
- The KVP should not be a repeat of the Conditional Phrase or the Purpose.
- All Solution ideas in Step 3 must address the action goal of the Key Verb Phrase.

...how might we encourage responsible use of wearable technology ...

NOTE: Step 3 Solution ideas must address all actions/goals presented in the Key Verb Phrase.

Scoring: (0, 2, 4, or 6 points)

- **0 points:** The Key Verb Phrase is missing.
- **2 points:** The Key Verb Phrase is present but has two verbs or verb phrases.
- **4 points:** The Key Verb Phrase is present but has two objects or two modifiers.
- **6 points:** The Key Verb Phrase is present and contains a single action verb or verb phrase.

Key Verb Phrase (KVP) Provides a single-action verb phrase that identifies the goal for Step 3 Solutions	KVP is missing	Present but has multiple verbs	Present but has multiple objects or modifiers	Present and contains a single-action verb
	0	2	4	6

C. PURPOSE (P)

The Purpose specifies a reason for accomplishing that goal identified by the KVP.

Purpose (P) – 0, 2, 4, 6 points

- The Purpose should be singular and provide the reason why pursuing the KVP is important.
- It should be a logical outcome of the KVP.
- The Purpose should not be a repeat of the Condition Phrase or the KVP.

NOTE: The Purpose often begins with “so,” “so that,” “such that”, or “in order to.”

- A UP that has no Purpose receives a 1-1 for Significance and Scope.
- **In non-competitive rounds,** if the UP has no Purpose, one will be imposed for the sake of offering feedback on Solutions.
- **In competitive rounds,** if the UP does not have a Purpose, one will not be imposed, and solutions will not be scored for Fluency. They will be scored only for Research Applied, Creative Strength, and Futuristic Thinking.

... so that private health data is not exploited in 2052 and beyond?

Evaluation of a booklet with multiple KVPs or multiple Purposes

- ✓ If there is a multiple KVP or Purpose
 - Only the first one is considered when scoring Significance, though all must be addressed in each Solution.
 - The Scope score will be reduced, and evaluators will use only the first verb/verb phrase or Purpose when scoring for Significance.
 - The Clarity score should fall within the Proficient or Developing range.
 - When scoring Solution ideas, all elements must be addressed to receive credit.

Scoring: (0, 2, 4, or 6 points)

BEST PRACTICES FOR GLOBAL ISSUES PROBLEM SOLVING EVALUATION

- **6 points:** The Purpose is present and has a single focus with a logical relationship to the Key Verb Phrase.
- **4 points:** The Purpose is present but does not have a clear relationship to the Key Verb Phrase.
- **2 points:** More than one Purpose is present, or it repeats the KVP or CP.
- **0 points:** The Purpose is missing.

Purpose (P) Provides a reason why pursuing the KVP is important	Purpose not present	Present but more than one or repeats KVP	Present but not clear relationship to KVP	Present and singular with logical relation to KVP
	0	2	4	6

D. FUTURE SCENE PARAMETERS (FSP)

The Future Scene parameters place the Underlying Problem within the confines of the Future Scene. These parameters include the topic (major focus of Future Scene), place (geographic location), and time (date from Future Scene, reasonably related dates, or logical time phrases).

Future Scene Parameters (FSP) – (0, 2, 4, 6 points)

- These parameters include the topic, place, and time as determined by the Future Scene situation.

Topic: Wearable Technology
Place: Patel home, worldwide, digital space
Time: 2052

NOTES:

- Parameters guide student thinking to operate within the FS.
- If incorrect parameters are included in the UP, Step 3 will still be scored according to the FSP determined by the Future Scene.

Scoring: (0, 2, 4, or 6 points)

- **6 points:** All 3 parameters of topic, place, and time are present.
- **4 points:** Two of the three parameters are present.
- **2 points:** One of the three parameters are present.
- **0 points:** Only one or none of the parameters are present.

FS Parameters (FSP) Topic, Time, and Place of the Future Scene	0 Parameters present	1 Parameter present	2 Parameters present	3 Parameters present
	0	2	4	6

2. **SIGNIFICANCE** assesses the *importance and merit* of the Underlying Problem and its impact on the Future Scene.

Scoring: (2-20 Even) (Critical Error - 1 point)

- The Underlying Problem should identify a major, important issue from the Future Scene, rather than a fact, a non-Challenge, the whole Future Scene, or something outside the Future Scene.
- 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.
- If there is a multiple KVP or Purpose, only the first one is considered when scoring Significance.

	Developing	Proficient	Very Good	Exemplary
Significance Assesses the importance of the UP to the Future Scene charge	Critical Error	Identifies minor issue from the FS	Identifies an appropriate issue related to the FS charge	Identifies an important issue related to the FS charge with a meaningful connection to the topic
	1			
	Weak relationship to FS, topic and charge	2 4 6	8 10 12	14 16

Strategy for Scoring UP Significance

BEST PRACTICES FOR GLOBAL ISSUES PROBLEM SOLVING EVALUATION

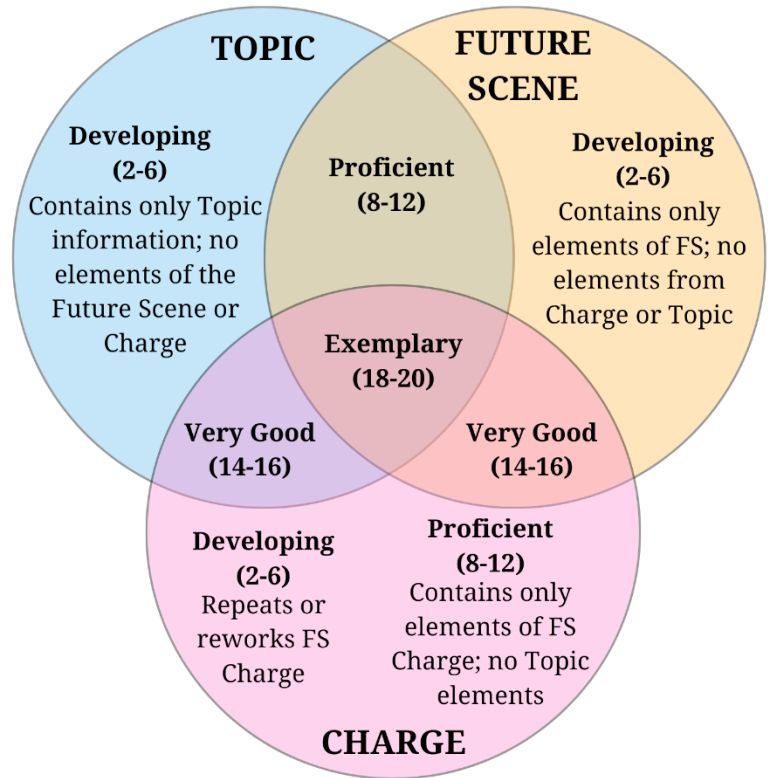
Consider the diagram when determining the Significance of the Underlying Problem. Each Underlying Problem should address three basic concepts somewhere in it, whether in the Condition Phrase, the KVP or the Purpose.

- Topic
- Future Scene Elements
- Future Scene Charge

The highest scoring Underlying Problems will contain all three; the lowest scoring UP none of them.

UPs that score a 1 for Significance and a 1 for Scope

- UP does not contain substantive elements of any circle
- UP has no Purpose
- UP negates the concept of the Future Scene



3. **SCOPE** looks at the *size* of the Underlying Problem and whether it is too broad or too narrow.

Scoring: (2-20 Even) (Critical Error - 1 point)

- 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 identified in the Underlying Problem should be large enough to impact the Future Scene but also be attainable.
- A higher score is awarded to an Underlying Problem that identifies a clear and manageable concern of the Future Scene. A lower score is given if the Challenge identified is too broad or too narrow.
- If there is a multiple Key Verb Phrase or a multiple Purpose, the UP will score low in Scope.

	Developing	Proficient	Very Good	Exemplary
Scope Measures the manageability and focus of the UP	Critical Error	UP so broad or narrow that it is unlikely to be attainable or effective	Consideration given to focus and manageability; impact may be limited	Identifies a small enough segment of the FS to be manageable but sizeable enough to be impactful
	1			
	Weak relationship to FS, topic and charge			
	2 4 6	8 10 12	14 16	18 20

4. **CLARITY** examines effective communication of the goal of the UP

Scoring: (2-20)

- The Condition Phrase identifies a significant issue from the Future Scene and provides the reason why the KVP and Purpose have been selected.
- The KVP presents what solutions should strive to accomplish in a way that is easy to understand.
- The Purpose should effectively indicate the reason for accomplishing the KVP.
- The CP, KVP, and Purpose should logically lead one into another.

BEST PRACTICES FOR GLOBAL ISSUES PROBLEM SOLVING EVALUATION

	Developing	Proficient	Very Good	Exemplary
Clarity Examines effective communication of the intent of the UP	Difficult to determine intent of UP	Action to be taken (KVP) is vague; intent of UP unclear	Effort made to clearly define action and explain its importance	UP clearly defines action and communicates effectively its importance
	2 4 6	8 10 12	14 16	18 20

During competitive rounds, if one of the following **Critical Errors** occurs, booklets are ineligible to advance to the next round and the following scoring should be applied.

Critical Errors

- ✓ A UP that does not contain a KVP receives a 1 for Significance, a 1 for Scope, and a 2 for Clarity.
- ❖ A UP that does not contain a Purpose receives a 1 for Significance, a 1 for Scope, and a 2 for Clarity.
- ✓ A UP must contain a substantive connection to the Topic and Future Scene. If not, it receives a 1 for Significance, a 1 for Scope, and a Developing score for Clarity.
- ✓ A UP that negates the concept of the Future Scene receives a 1 for Significance, a 1 for Scope, and a Developing score for Clarity.
- ✓ If the Purpose repeats the KVP, the Purpose receives 2 points in structure receives a 1 for Significance, a 1 for Scope, and a 2 for Clarity.

The Step 2 total score is determined by adding together all points awarded for each of the 6 components as indicated on the score sheet. There are no scoring differences between the Team, and Individual/MAGIC score sheets.

	Team/Individual/MAGIC Booklet
Condition Phrase	0-6
Key Verb Phrase	0-6
Purpose	0-6
Future Scene Parameters	0-6
Significance	1-20
Scope	1-20
Clarity	2-20

Common Evaluation Issues for Underlying Problems

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 UP. Many aspects must be considered in evaluating this step in problem solving. Below are common concerns when scoring an Underlying Problem that do not successfully execute the proper Underlying Problem format.

	Developing	Meets Standard	Exceeds Standard
Condition Phrase (CP)	<ul style="list-style-type: none"> • Makes assumptions • Written as a challenge 	<ul style="list-style-type: none"> • Based on facts from the FS or research related to the FS 	<ul style="list-style-type: none"> • Facts logically linked to KVP & Purpose • Clear & Concise
Stem	<ul style="list-style-type: none"> • Missing 	<ul style="list-style-type: none"> • How might we (HMW) • In what ways might we (IWWMW) • Other appropriate phrase 	<ul style="list-style-type: none"> • Same as standard

BEST PRACTICES FOR GLOBAL ISSUES PROBLEM SOLVING EVALUATION

	Developing	Meets Standard	Exceeds Standard
Key Verb Phrase (KVP)	<ul style="list-style-type: none"> • Not based on challenges • Unclear relationship to FS • Not singular 	<ul style="list-style-type: none"> • Derived from challenge(s) • Clearly related to FS • Singular 	<ul style="list-style-type: none"> • Significant issue chosen that will positively impact the FS if solved • Specific/sophisticated verbs
Purpose (P)	<ul style="list-style-type: none"> • Missing • Doesn't relate to KVP • Repeats the KVP • AND/OR (not singular) 	<ul style="list-style-type: none"> • Specifies logical, desired outcome of KVP • Singular 	<ul style="list-style-type: none"> • Continues to move with KVP in singular, desired direction • Identifies important stakeholders
FS Parameters	<ul style="list-style-type: none"> • One or more missing • Inaccurate topic, time, place 	<ul style="list-style-type: none"> • Includes topic, time, and place from FS 	<ul style="list-style-type: none"> • Same as standard
Significance	<ul style="list-style-type: none"> • Weak relationship to FS, topic, OR FS charge 	<ul style="list-style-type: none"> • Identifies appropriate issue related to FS charge 	<ul style="list-style-type: none"> • Significant issue chosen that will positively impact the FS if solved • Identifies major, important issue with strong connection to the FS • Responds directly to the charge • Demonstrates meaningful connection to the topic
Scope	<ul style="list-style-type: none"> • UP so narrow it is unlikely to be impactful • UP so broad that it is unlikely to be attainable 	<ul style="list-style-type: none"> • Consideration given to focus and manageability 	<ul style="list-style-type: none"> • Issues is sizeable enough to be impactful • Identifies small enough aspect of the FS to be attainable
Clarity	<ul style="list-style-type: none"> • Intent of UP unclear, difficult to determine 	<ul style="list-style-type: none"> • Action clearly defined • Importance clearly communicated 	<ul style="list-style-type: none"> • Desired outcomes and their importance effectively communicated • Precise/sophisticated wording

The table below provides examples with suggested scores only for the elements of the UP impacted by the corresponding concern. Evaluators should review the Evaluation Notes for each topic for UP examples and scoring for that Future Scene.

Scoring Common UP Concerns		
Concern	Description	Example
KVP missing	<p>This is unusual by might occur if-</p> <ul style="list-style-type: none"> • Students do not understand the structure of the UP. • Students use one of their challenges as a UP. <p><u>Scoring:</u> ✓ A UP that does not contain a Key Verb Phrase receives a 1 for Significance and a 1 Scope and a 2 for Clarity.</p>	<p><i>In the future scene, "Maya lounges on the floor in front of the TV. She is enjoying her new RealAug contact lenses. ... Now she uses the contacts to scroll through her friends' social mediaposts." Kids are ruining their eyes by looking at screens all day long.</i></p> <p align="right"> CP: 2 P: 0 KVP: 0 FSP: 0 Significance: 1 Scope: 1 Clarity: 2 </p>

Scoring Common UP Concerns		
<p>KVP multiple verbs/ verb phrases/ objects of the verb</p>	<ul style="list-style-type: none"> A KVP should contain a single verb or verb phrase with a single object. Words <i>and</i>, <i>or</i>, and <i>while</i> in the Key Verb Phrase increase the chance of a multiple verb or multiple objects. <p><u>Scoring:</u></p> <ul style="list-style-type: none"> ✓ The Scope score will be reduced (Proficient or below). ✓ Use only the first verb/verb phrase or object when scoring for Significance. ✓ Clarity should be scored as Proficient or below. ✓ To be scored as Relevant in Step 3, Solution ideas must address everything mentioned in the KVP. 	<p><u>Example of multiple verbs:</u> <i>...how might we improve and beautify the design of wearable technology ...</i> KVP: 2 Significance: 12 Scope: 4 Clarity: 4</p> <p><u>Example of multiple objects of the verb:</u> <i>...how might we reduce the collection and exploitation of data provided by wearable technology...</i> KVP: 4 Significance: 8 Scope: 6 Clarity: 6</p>
<p>KVP absolute verbs</p>	<ul style="list-style-type: none"> The dictionary defines absolute as “free from imperfection; perfect.” These verbs indicate that the KVP mandate will be done with <u>no</u> possibility of failure! An absolute verb <i>may</i> (<i>in very few circumstances</i>) be appropriate, depending on the topic. <p><u>Scoring:</u></p> <ul style="list-style-type: none"> ✓ The use of an absolute verb should have no impact on the Significance score, which is about the importance of the issue selected. ✓ In general, absolute verbs unnecessarily narrow the Scope, thus reducing the points awarded. ✓ Clarity should be scored as normal. ✓ The use of an absolute verb is most likely to have an impact on the scoring of Step 3 Solutions than on the scoring of the UP. If the KVP is to eliminate something, reducing it by 90% has not stopped it. 	<p><i>Wearable tech has become a part of every activity of the Patel family, from health tracking to leisure. How might we stop wearable tech-based dependency so that users may continue to use wearable tech without it leading to harm in 2052?</i></p> <p>CP: 6 P: 6 KVP: 6 FSP: 4 Significance: 16 Scope: 8 Clarity: 16</p> <ul style="list-style-type: none"> Many evaluators spend too much time determining the absoluteness of a verb. The verbs <i>maintain, establish, supervise, standardize, convince and provide</i> are <u>not</u> absolute verbs. When in doubt, check the dictionary. The most common absolute verbs found in student booklets are guarantee, eliminate, insure, ensure, stop, prevent and prohibit. <ul style="list-style-type: none"> Placing the verb help before any of these verbs does not make a difference. Help is not a helping verb and should not be used as such.
<p>KVP & Purpose Lacks any of three elements of Topic, FS and FS Charge</p>	<p><u>Scoring:</u></p> <ul style="list-style-type: none"> UP’s that do not contain any of the three elements of Topic, Future Scene or Charge of the Future Scene are scored a 1 for Significance and a 1 for Scope. ✓ Clarity should be scored as Proficient or below. 	<p><i>...how might we overcome the issues created by technology in 2052 so that it will work better?</i> KVP: 6 P: 6 Significance: 1 Scope: 1 Clarity: 6</p>

Scoring Common UP Concerns		
<p>KVP & Purpose unrelated to the Future Scene</p>	<ul style="list-style-type: none"> An unrelated UP ignores the facts of the Future Scene, perhaps concentrating on some aspect of topic research. <p><u>Scoring:</u></p> <ul style="list-style-type: none"> ✓ A score of 1 is given for Significance and a score of 1 is given for Scope. ✓ Clarity should be scored as Developing. ✓ The FSP of topic, place, and time are used when scoring Step 3, even if others are stated in the UP, causing scores to be lower in Impact on Future Scene in Step 6. 	<p><i>... how might we reduce bullying of kids for their wearable tech so that kids maintain optimal emotional health levels globally in 2052 and beyond?</i></p> <p style="text-align: right;">KVP: 6 P: 6 Significance: 1 Scope: 1 Clarity: 8</p>
<p>Purpose with multiple goals</p>	<ul style="list-style-type: none"> The Purpose should contain a single reason for accomplishing the KVP. Words <i>and, or, and while</i> in the Purpose increase the chance of a multiple verb or multiple objects. <p><u>Scoring:</u></p> <ul style="list-style-type: none"> ✓ A score of 2 is given for Purpose. Evaluators will refer only to the first when scoring Significance. ✓ The UP will score Proficient or below in Scope. ✓ Clarity may be scored as Proficient or below. ✓ Solution ideas must support all goals. 	<p><i>... how might we promote the proper use of wearable technology so that consumers continue to live physically, socially, and psychologically healthy lives around the world in 2052 and beyond?</i></p> <p style="text-align: right;">KVP: 6 P: 2 Significance: 10 Scope: 6 Clarity: 4</p>
<p>Purpose missing</p>	<ul style="list-style-type: none"> The implications for scoring the subsequent Steps, particularly Step 3 Solutions, are determined by the round of competition. <p><u>Scoring:</u></p> <ul style="list-style-type: none"> ✓ A score of 0 is given for Purpose. ✓ Scores of 1 are given for Significance and Scope (Critical Error). ✓ Clarity is given a score of 2. 	<p><i>... how might we increase the use of Wearable Technology in the year 2032 and beyond?</i></p> <p style="text-align: right;">KVP: 6 P: 0 Significance: 1 Scope: 1 Clarity: 2</p>
	<p>Non-Competitive Rounds</p> <ul style="list-style-type: none"> Evaluators will provide feedback that explains the usefulness of the Purpose to the UP, helping students to understand the connection between a Purpose and the KVP in the UP. During competitive rounds, a Purpose will not be imposed. Evaluators will impose a Purpose that seems logical to the Future Scene and the KVP as well as be suitable to the division of the students. 	<p>Competitive Rounds</p> <ul style="list-style-type: none"> Evaluators will provide feedback that explains the importance of a Purpose in defining the goals of the Key Verb Phrase. Evaluators do not complete the UP by imposing a Purpose in competitive rounds of FPS evaluation. Solutions cannot be scored Relevant for Fluency, as they must support the Purpose. They will be scored only for Research Applied, Creative Strength, and Futuristic Thinking.

Scoring Common UP Concerns		
	<p>Two possible ways to impose a Purpose:</p> <ul style="list-style-type: none"> ➤ Read the Solutions and create a Purpose that will be suitable for multiple Solutions. (Favored by Affiliates that require a booklet be evaluated by a single evaluator.) ➤ Read the Action Plan and create a Purpose that will be suitable for it. (Favored by Affiliates that evaluate by Step because it takes less time for UP evaluators and assures that the solution chosen for the Action Plan will be Relevant.) 	
<p>KVP & Purpose are the same</p>	<ul style="list-style-type: none"> • The implications for scoring the subsequent Steps, particularly Step 3 Solutions, are determined by the round of competition. <p><u>Scoring:</u></p> <ul style="list-style-type: none"> ✓ A score of 2 is given for Purpose. ✓ Scores of 1 are given for Significance and Scope (Critical Error). ✓ Clarity is given a score of 2. 	<p><i>How might we reduce wearable tech-based dependency so that users do not become dependent on it in 2052?</i></p> <p style="text-align: center;">KVP: 6 P: 2</p> <p style="text-align: center;">Significance: 1</p> <p style="text-align: center;">Scope: 1</p> <p style="text-align: center;">Clarity: 2</p>
	<p><u>Non-Competitive Rounds</u></p> <ul style="list-style-type: none"> • Evaluators will provide feedback that explains the usefulness of the Purpose to help scope the Underlying Problem, helping students to understand the difference between a Purpose and the Key Verb Phrase in the UP. During competitive rounds, a Purpose will not be imposed. • Evaluators will impose a new Purpose that seems logical to the Future Scene and the KVP as well as be suitable to the division of the students. 	<p><u>Competitive Rounds</u></p> <ul style="list-style-type: none"> • Evaluators will provide feedback that explains the importance of a Purpose in defining the goals of the Key Verb Phrase. • Evaluators do not impose a new Purpose in competitive rounds of FPS.
	<p>Two possible ways to impose a Purpose:</p> <ul style="list-style-type: none"> ➤ Read the Solutions and create a Purpose that will be suitable for multiple Solutions. (Favored by Affiliates that require a booklet be evaluated by a single evaluator.) ➤ Read the Action Plan and create a Purpose that will be suitable for it. (Favored by Affiliates that evaluate by Step because it takes less time for UP evaluators and assures that the solution chosen for the Action Plan will be Relevant.) 	
<p>KVP & Purpose Negate the Future Scene</p>	<ul style="list-style-type: none"> • Trying to go against the FS situation contradicts the problem solving process. • Scores of Steps 3-6 will likely be negatively impacted. <p><u>Scoring:</u></p> <ul style="list-style-type: none"> ✓ Scores of 1 are given for Significance and Scope (Critical Error). ✓ Clarity is given a Developing score. 	<p><i>How might we eliminate wearable technology so that any ill effects that result from it are no longer an issue?</i></p> <p style="text-align: center;">KVP: 6 P: 6</p> <p style="text-align: center;">Significance: 1</p> <p style="text-align: center;">Scope: 1</p> <p style="text-align: center;">Clarity: 4</p>



STEP 3

Produce Solution Ideas

A Solution idea, if Relevant, addresses the Key Verb Phrase and clearly supports the Purpose. It does not contradict the Future Scene parameters of topic, place, and time or Future Scene charge.

Student Objective: To identify varied and unique solution ideas in response to the UP identified in Step 2.

Scoring:

1. Solutions are scored for Fluency.
2. Relevant Solutions are assigned a category for Flexibility.
3. Relevant Solutions are considered for their degree of Elaboration + Clarity.
4. Relevant Solutions are considered for Originality.
5. The step as a whole is scored for Fundamental Concepts.

Well-written, elaborated Solution ideas follow these guidelines:

- A. Solutions are written in statement form to present an action that will be taken in response to the Underlying Problem.
- B. Solution ideas respond to the KVP and support the Purpose.
- C. Solutions must operate within the Future Scene Parameters.
- D. Solution ideas should be written in statement form as definite proposals, using the word “will” rather than “may” or “might.”

NOTE: Using “may” instead of “will” affects the Clarity score – not Fluency.

1. **FLUENCY** measures the *quantity* of **Relevant** Solution *ideas*. Each Solution idea is classified in one of the following ways:

Relevant – a Solution that addresses the KVP and supports the Purpose implicitly or explicitly.

Maybe – a Solution idea that needs additional information to be considered Relevant.

Not Relevant – a Solution that is not related to the UP or is inconsistent with the Future Scene.

Duplicate – a Solution that is too contextually similar to another Relevant Solution.

Blank – no student response provided.

Relevant – A Solution idea that addresses, or has a relationship to, the Key Verb Phrase and supports the Purpose receives 1 point. In addition, it does not contradict the Future Scene parameters (Topic, Place, and Time) or the Future Scene Charge. Any response that does not meet the criteria for Relevant is not scored for Flexibility, Elaboration, Clarity, or Originality.

- A **Relevant** Solution idea does not have to solve the Underlying Problem completely, but it must show a relationship to the UP.
- A **Relevant** Solution does not have to work perfectly, be humane, be cost effective, be tried and true, or be new. These aspects are judged in Step 6 - Action Plan.
- A **Relevant** Solution idea does not have to be elaborated. The scope of Fluency is on the *ideas*, not the sophistication or elaboration of the *writing*.
- 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**.

Scoring Relevant Solutions

- The use of an absolute verb does not automatically prevent it from being scored **Relevant**, but it does make it more difficult.
- A Solution idea should not be denied a **Relevant** because the word “will” was not used. A comment in the feedback section about using “will” is sufficient. This is a matter of Clarity.
- The Condition Phrase, Key Verb Phrase, and/or Purpose do not have to be repeated for a Solution to be **Relevant**

NOTE: If the Solution is not Relevant, consider the other Fluency options (proceed to page 25). Any response that does not meet the criteria for Relevant is not scored for Flexibility, Clarity, Insight, or Originality.

Each **Relevant** Solution is then considered for **Flexibility**.

2. **FLEXIBILITY** measures the *variety* of viewpoints considered in the **Relevant** Solution ideas.

Considering the 21 categories, assign one category to the **Relevant** Solution idea. Each unique category used in Step 3 will receive 1 point.

- Evaluators categorize the **Relevant** Solution responses, using the categories listed on the score sheet and as presented above.
- Some Solutions can be categorized in more than one way. Evaluators are encouraged to assign a category that has not yet been awarded in Step 3.

NOTE: Use of Miscellaneous categories in Step 3 has no relationship to their use in Step 1.

Each **Relevant** Solution is then considered for **Elaboration**.

3. **ELABORATION** considers the inclusion of three additional elements of information within the Solution idea: who, how, and why. Elaborated Solutions receive 1 point.

- Who – an appropriate person/entity with the power, interest, or expertise to implement the Solution
 - Simply stating a name is not enough. The name should convey attributes listed above, or additional information is needed.
 - The same relevant “who” can receive credit only twice. Repeating the same “who” in additional Solution ideas will not receive credit toward Elaboration.
- How – the manner in which the Solution will be carried out
- Why – presents a suitable reason for enacting the Solution in terms of one of the following:
 - Why the solution fulfills the KVP
 - Why the solution supports the Purpose
 - Why the solution is effective in solving the UP as a whole

NOTE: A restatement of the UP Purpose is not acceptable as a “why”

Each **Relevant** Solution that receives credit as **Elaborate** is then scored for **Clarity**.

CLARITY measures the quality of the writing for effective communication of the action proposed in Solutions receiving credit for Elaboration and receives 1 point.

- A Clearly written Solution presents the action and its elaborated details concisely in a manner that is easy to understand.
- The connection to the Purpose explicitly stated improves Clarity.

NOTE: A Relevant Solution whose reasoning is questionable but contains the three elements of Elaboration, should receive a 1 for Elaboration only. (No additional credit for Clarity.)

A **Relevant** Solution may be scored for Originality.

4. **ORIGINALITY** rewards **Relevant** Solution ideas that are especially insightful, highly creative, and/or unique. An Original Solution is a response that is found infrequently among responses at that age/grade level and considered of high quality (insightful, indicative of breakthrough thinking). Each Original challenge idea receives 1 point, with no more than 5 permitted.
- Original ideas are those that go beyond the obvious and thus appear in less than 2% of Challenge ideas for that division.
 - Challenges do not need to receive points for Clarity and Insight to be considered for Originality.
- NOTE:** Wildly futuristic ideas are not always original.

If the Solution is not scored Relevant, consider the other Fluency options to classify the Solution idea:

Maybe –Solution idea needs additional information to be considered Relevant. Solution is ambiguous or intent is not clear.

Not Relevant – Solution idea is not related to the UP or is inconsistent with the Future Scene OR the statement does not describe a Solution Idea.

- Key Verb Phrase not addressed
- Purpose not supported
- Solution idea inconsistent with the Future Scene
- Solution idea does not operate within the Future Scene Parameters

Duplicate – Solution too contextually similar to another idea previously scored as Relevant cannot receive credit. Evaluators should not confuse duplicate ideas with duplicate categories – it is acceptable for students to list several different ideas in the same category.

NOTE: Duplicate Solution ideas are not the same as a repeated category.

Blank – No student response is provided.

After scoring all Solution ideas, consider the entire Step for Fundamental Concepts.

5. **FUNDAMENTAL CONCEPTS** – Step 3 as a whole is scored for Research Applied, Creative Strength, and Futuristic Thinking as noted.

NOTE: If no work is submitted for the step a score of 0 will be given for Research Applied, Creative Strength and Futuristic Thinking.

The Step 3 total score is determined by adding together all points awarded for:

		Team Booklet	Individual/MAGIC Booklet
Fluency	Up to 1 point per Solution	0-16	0-8
Flexibility	Up to 1 point per Solution	0-16	0-8
Elaboration +Clarity	Up to 2 points per Solution	0-32	0-16
Originality	Up to 1 point per Solution (max of 5)	0-5	0-5
Research Applied	Up to 5 points for the entire Step	1-5	1-5
Creative Strength	Up to 5 points for the entire Step	1-5	1-5
Futuristic Thinking	Up to 5 points for the entire Step	1-5	1-5

Common Evaluation Issues for Solutions

Step 3 is intricately related to the Underlying Problem. Often a misstep in Step 2 has specific ramifications for how to proceed with scoring Solutions. Below are notes on scoring Solution ideas when an Underlying Problem was incomplete or did not effectively apply the proper format.

Scoring Solution Ideas for UPs with Concerns			
KVP missing	<ul style="list-style-type: none"> Without a KVP to establish a goal for Solutions to accomplish, they cannot receive credit for Fluency. All Solution ideas should be scored “Not Relevant”. 		
KVP multiple verbs/ verb phrases/ objects of the verb	<ul style="list-style-type: none"> Although only the first verb phrase is considered when scoring for Significance, each Solution must <i>address</i> (have a relationship to, not completely solve) both of the verbs in order to score as Relevant. If Relevant - score Elaboration and Clarity as usual. 		
KVP absolute verbs	<ul style="list-style-type: none"> The use of an absolute verb does not automatically prevent it from being scored Relevant, but it does make it more difficult. Each Solution idea must be examined to determine if it addresses the KVP and supports the Purpose. <ul style="list-style-type: none"> If the KVP is to eliminate something, reducing it by 90% has not eliminated it. If Relevant - score Elaboration and Clarity as usual. 		
KVP & Purpose unrelated to the Future Scene	<ul style="list-style-type: none"> The Future Scene parameters of topic, time, and place are considered when determining the Fluency of each Solution idea. If a Solution is not consistent with these it should be scored Not Applicable. If Relevant - score Elaboration and Clarity as usual. 		
Purpose with multiple goals	<ul style="list-style-type: none"> Although only the first is considered when scoring the UP for Significance, each Solution must <i>support</i> both of the ideas in order to score as Relevant. This still does not mean that an explicit description of the relationship is required, but the relationship must be obvious or easily inferred. If Relevant - score Elaboration and Clarity as usual. 		
Purpose missing	<table border="0" style="width: 100%;"> <tr> <td style="vertical-align: top; width: 50%;"> <p><u>Non-Competitive Rounds:</u></p> <ul style="list-style-type: none"> The Purpose imposed in Step 2 is used to determine whether or not a Solution is Relevant. Once again, this does not mean that an explicit description of the relationship is required, but the relationship must be obvious or easily inferred. Evaluators provide feedback that emphasizes the connection of Solution ideas to the Purpose. If Relevant - score Elaboration and Clarity as usual. </td> <td style="vertical-align: top; width: 50%;"> <p><u>Competitive Rounds:</u></p> <ul style="list-style-type: none"> Solutions should be scored Not Relevant for Fluency, as they cannot support the Purpose. All Solution ideas are read to be scored for Research Applied, Creative Strength, and Futuristic Thinking. Evaluators should include in their comments an example of a possible Purpose that might be consistent with some of their Solution ideas. </td> </tr> </table>	<p><u>Non-Competitive Rounds:</u></p> <ul style="list-style-type: none"> The Purpose imposed in Step 2 is used to determine whether or not a Solution is Relevant. Once again, this does not mean that an explicit description of the relationship is required, but the relationship must be obvious or easily inferred. Evaluators provide feedback that emphasizes the connection of Solution ideas to the Purpose. If Relevant - score Elaboration and Clarity as usual. 	<p><u>Competitive Rounds:</u></p> <ul style="list-style-type: none"> Solutions should be scored Not Relevant for Fluency, as they cannot support the Purpose. All Solution ideas are read to be scored for Research Applied, Creative Strength, and Futuristic Thinking. Evaluators should include in their comments an example of a possible Purpose that might be consistent with some of their Solution ideas.
<p><u>Non-Competitive Rounds:</u></p> <ul style="list-style-type: none"> The Purpose imposed in Step 2 is used to determine whether or not a Solution is Relevant. Once again, this does not mean that an explicit description of the relationship is required, but the relationship must be obvious or easily inferred. Evaluators provide feedback that emphasizes the connection of Solution ideas to the Purpose. If Relevant - score Elaboration and Clarity as usual. 	<p><u>Competitive Rounds:</u></p> <ul style="list-style-type: none"> Solutions should be scored Not Relevant for Fluency, as they cannot support the Purpose. All Solution ideas are read to be scored for Research Applied, Creative Strength, and Futuristic Thinking. Evaluators should include in their comments an example of a possible Purpose that might be consistent with some of their Solution ideas. 		
KVP & Purpose are the same	<table border="0" style="width: 100%;"> <tr> <td style="vertical-align: top; width: 50%;"> <p><u>Non-Competitive Rounds:</u></p> <ul style="list-style-type: none"> The Purpose imposed in Step 2 is used to determine whether or not a Solution is Relevant. Once again, this does not mean that an explicit description of the relationship is required, but the relationship must be obvious or easily inferred. Evaluators provide feedback that emphasizes the connection of Solution ideas to the new Purpose. If Relevant - score Elaboration and Clarity as usual. </td> <td style="vertical-align: top; width: 50%;"> <p><u>Competitive Rounds:</u></p> <ul style="list-style-type: none"> Solutions should be scored Not Relevant for Fluency, as they cannot support the Purpose. All Solution ideas are read to be scored for Research Applied, Creative Strength, and Futuristic Thinking. Evaluators should include in their comments an example of a possible Purpose that might be consistent with some of their Solution ideas. </td> </tr> </table>	<p><u>Non-Competitive Rounds:</u></p> <ul style="list-style-type: none"> The Purpose imposed in Step 2 is used to determine whether or not a Solution is Relevant. Once again, this does not mean that an explicit description of the relationship is required, but the relationship must be obvious or easily inferred. Evaluators provide feedback that emphasizes the connection of Solution ideas to the new Purpose. If Relevant - score Elaboration and Clarity as usual. 	<p><u>Competitive Rounds:</u></p> <ul style="list-style-type: none"> Solutions should be scored Not Relevant for Fluency, as they cannot support the Purpose. All Solution ideas are read to be scored for Research Applied, Creative Strength, and Futuristic Thinking. Evaluators should include in their comments an example of a possible Purpose that might be consistent with some of their Solution ideas.
<p><u>Non-Competitive Rounds:</u></p> <ul style="list-style-type: none"> The Purpose imposed in Step 2 is used to determine whether or not a Solution is Relevant. Once again, this does not mean that an explicit description of the relationship is required, but the relationship must be obvious or easily inferred. Evaluators provide feedback that emphasizes the connection of Solution ideas to the new Purpose. If Relevant - score Elaboration and Clarity as usual. 	<p><u>Competitive Rounds:</u></p> <ul style="list-style-type: none"> Solutions should be scored Not Relevant for Fluency, as they cannot support the Purpose. All Solution ideas are read to be scored for Research Applied, Creative Strength, and Futuristic Thinking. Evaluators should include in their comments an example of a possible Purpose that might be consistent with some of their Solution ideas. 		

Solution Evaluation Examples

Underlying Problem: Because people are extremely reliant on their wearable technology, how might we encourage better use of technology in order to promote a more balanced relationship between users and their wearable devices in the world in 2052 and beyond?			
Example Solution	Scoring		Rationale
1a An application will keep track of the time people are on their devices.	Fluency	Maybe	Additional information is needed to connect this concept to the UP.
	Flexibility	-	
	Elaboration	-	
	Clarity	-	
1b An application will be created that keeps track of the time that users are not solely using their devices, therefore creating a more balanced lifestyle in relation to technology.	Fluency	Relevant	Did not include Who or Why it creates a more balanced lifestyle.
	Flexibility	Technology	
	Elaboration	No	
	Clarity	No	
1c The Wearable Technology Gamification Company (WTGC) will partner with various governments around the world to create an application that tracks time spent not just on their devices in order to foster a more balanced lifestyle by giving points toward prizes based on use.	Fluency	Relevant	The idea presented and the actions to be taken are a little confusing, thus no points are awarded for Clarity.
	Flexibility	Technology	
	Elaboration	Yes	
	Clarity	No	
1d The Wearable Technology Gamification Company (WTGC) will partner with governments all over the world to create an application that keeps track of the time that users are not solely using their devices. For each minute that users are engaging in another activity, users will receive a point and these points can be used to redeem various prizes. This will create a more balanced lifestyle in relation to technology.	Fluency	Yes	Who, How and Why specifically explained; effectively communicates the proposed action so Clarity is awarded
	Flexibility	Technology	
	Elaboration	Yes	
	Clarity	Yes	
1e The Wearable Technology Gamification Company (WTGC) will partner with governments all over the world to create an application that keeps track of the time that users are not solely using their devices. For each minute that users are engaging in another activity instead of only using their wearable tech, users will receive a point and these points can be used to redeem various prizes, like gift cards for restaurants and even days off from school or work. This incentivization can motivate people to spend more time away from their devices, therefore creating a more balanced lifestyle in relation to technology.	Fluency	Yes	Well presented. Details are relevant and clearly stated.
	Flexibility	Technology	
	Elaboration	Yes	
	Clarity	Yes	

BEST PRACTICES FOR GLOBAL ISSUES PROBLEM SOLVING EVALUATION

<p>2a The Technology Addicts Anonymous (TAA) will host in-person support groups for addicts run by people who have overcome a technology addiction. During the session, people will be able to share their experiences with addiction in a safe environment.</p>	Fluency	Yes	<p>The Why is missing, so not specific about how it helps solve the UP.</p>
	Flexibility	Psychological Health	
	Elaboration	No	
	Clarity	No	
<p>2b The Technology Addicts Anonymous (TAA) will host in-person support groups for addicts run by people who have overcome a technology addiction in order to create a more balanced relationship with technology by sharing experiences in a safe environment.</p>	Fluency	Yes	<p>Who, How and Why generalized; the idea presented & the actions to be taken are a little confusing.</p>
	Flexibility	Psychological Health	
	Elaboration	Yes	
	Clarity	No	
<p>2c The Technology Addicts Anonymous (TAA) will host in-person support groups for addicts run by people who have overcome a technology addiction. During the session, people will be able to safely share their experiences with addiction in exchange for helpful feedback, empowering participants to have a more balanced relationship with technology.</p>	Fluency	Yes	<p>Who, How & Why generalized; actions clearly explained.</p>
	Flexibility	Psychological Health	
	Elaboration	Yes	
	Clarity	Yes	



STEP 4

Generate and Select Criteria

Criteria are the standards by which Solution ideas are compared. 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 one will best accomplish the goals of the Underlying Problem.

Student Objective: To determine 5 criteria that measure how well the Solution idea accomplishes the Underlying Problem.

Scoring:

1. Criteria are scored for being Correctly Written.
2. Criteria are scored for Applicability.

1. **CORRECTLY WRITTEN** assesses how effectively students fit their concepts into a prescribed format. At this point, the evaluator is not deciding the value of the criterion but assessing only the structure. This format is comprised of four elements:
 - A. Focuses on a single standard
 - B. Demonstrates a measure of degree using a superlative
 - C. Indicates the desired outcome
 - D. Recognizable as a question

A. **Single Standard**

Each criterion must deal with a single standard. The words “and” and “or” in a criterion often indicate multiple standards and should be avoided.

- Adding the KVP or Purpose to a criterion with words like “when” and “while” is usually a time constraint and not a multiple standard.
- Adding a phrase with the words “so that” or “in order to” along with a superlative often results in a multiple standard. In that case, award 0 for correctly written.

B. **Superlative**

Each criterion must include a superlative (best, longest, easiest, fewest, most, greatest, etc.), allowing the Solution ideas to be ranked in Step 5.

- Comparative words do not rate as “Correctly Written.” (These include better, longer, easier, fewer, more, greater, etc.)

C. **Desired Outcome**

Each criterion must be stated so that the desired outcome is indicated.

D. **Question**

Criteria should be recognizable as a question. With or without the question mark, we would read it/see it clearly as a question to weigh our Solutions.

Scoring: (0 or 2 points)

- **0 points:** Criterion does not satisfy all four requirements.
- **2 points:** Criterion meets all four requirements.

2. **APPLICABILITY** assesses the usefulness of the criteria content. 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 relevant research, Underlying Problem, and Future Scene for this topic score more points.

- All criteria are scored for **Applicability**, *even if* they were not correctly written.
- For criteria with multiple standards (thus not Correctly Written), use only the *first* standard to determine applicability.

Scoring: (0, 3, or 6 points)

- **Targeted** – 6 points each
 - A Criterion that applies only to the designated UP and is significant in solving the UP
 - Can be based on the Key Verb Phrase
 - Can be based on the Purpose
 - Can be specific in itself to the Underlying Problem
 - ❖ A criterion that is generic but is justified with *specific facts* from the Future Scene that relate closely to the Underlying Problem.
 - Can be specific to topic research that relates to the UP
 - Can be a generic concept, justified with relevant Future Scene facts that relate to the UP
 - ❖ If the justification does not include accurate facts from the Future Scene, ignore it in scoring.

NOTE: Future Scene Parameters alone are not enough to score as Targeted.

- **Generic** – 3 points each
 - A Criterion that could be applied to nearly any Underlying Problem
 - Simply adding Future Scene Parameters or stakeholders without a connection to the UP is a generic criterion
- **Duplicate** – 0 points awarded
 - Any Criterion idea **too** similar to a Criterion already recognized as Targeted or Generic
- **Not Applicable** – 0 points
 - A Criterion that is not useful for evaluating solutions for this Underlying Problem

BEST PRACTICES FOR GLOBAL ISSUES PROBLEM SOLVING EVALUATION

- **Blank** – 0 points awarded
 - No student response provided

The Step 4 total score is determined by adding together all points awarded for each of the components as indicated on the score sheet. There are no scoring differences between the Team, and Individual/MAGIC score sheets.

		Team/Individual/MAGIC Booklet
Correctly Written	0 or 2 points per Criterion	0-10
Applicability	0, 3, or 6 points per Criterion	0-30

Underlying Problem: Because the Patel family uses wearable technology to gauge their health, which could lead to inaccurate data, how might we encourage responsible use of wearable technology so that their private health data is not exploited worldwide in 2052 and beyond?				
Example Criteria		Scoring		Rationale
1. Which Solution will (WSW) most convince people to use wearable technology?	CW:	Yes	Not Applicable	Has no relevance to evaluating Solutions for this UP.
	A:			
2. Which Solution will result in the most people wanting to use wearable technology?	CW:	Yes	Targeted	
	A:			
3. Which Solution will (WSW) most convince people to use wearable technology?	CW:	Yes	Duplicate	Same concept as #2.
	A:			
4. WSW will last the longest?	CW:	Yes	Generic	Addition of FSP does not elevate the concept beyond Generic.
	A:			
5. WSW best enhance communication in 2052?	CW:	Yes	Targeted	
	A:			
6. WSW improve communication the most?	CW:	Yes	Duplicate	Same concept as #5.
	A:			
7. Which solution will cost the most?	CW:	No	Not Applicable	Not a desired direction
	A:			
8. Which Solution will be the safest for those who use wearable technology to monitor their health?	CW:	Yes	Targeted	Generic concept elevated
	A:			
9. WSW people accept the most on the topic of wearable technology?	CW:	Yes	Generic	
	A:			
10. WSW improve communication the most?	CW:	Yes	Not Applicable	Has no relevance to evaluating Solutions for this UP.
	A:			
11. Because the Patel family uses wearable technology to gauge their health and "the sensor on the kitchen door isn't working," which solution will be the most reliable for users of wearable technology?	CW:	Yes	Targeted	
	A:			

Common Evaluation Issues for Criteria

Criteria are more complex than it might seem at first and a variety of mistakes may occur. See the table below for examples of student work, and the appropriate scores for such work.

Criteria Scoring Concerns with Examples				
Underlying Problem: Because the Patel family uses wearable technology to gauge their health, which could lead to inaccurate data, how might we encourage responsible use of wearable technology so that their private health data is not exploited worldwide in 2052 and beyond?				
Concern	Example	Scoring		Rationale
No superlative	Which Solution will not cost as much in 2052?	CW: No	Generic	no superlative
		A: Generic		
Desired Outcome not clear	WSW least promote responsible wearable technology use?	CW: No	NA	undesirable direction
		A: NA		
Not related to the UP	WSW be safest for the people using wearable technology?	CW: Yes	NA	not relevant to this UP
		A: NA		
Meaning difficult to discern	WSW be the most valuable?	CW: Yes	Generic or NA	This appears to be a generic criterion; however, the intent to be considered when ranking the ideas is not obvious.
		A: NA		
Multiples	WSW the companies and wearers find most acceptable?	CW: No	Generic	Not singular. Score using only first element (companies).
		A: Generic		
	WSW benefit the wearable technology users the most so they can be the safest?	CW: No	Generic	Not singular. Score using only first element (benefit).
		A: Generic		
Justification used incorrectly	Since the Patel family don't get along, WSW be the most acceptable to them?	CW: Yes	Generic	Inaccurate justification. Without justification, the remaining criterion is generic.
		A: Generic		
	Because wearable technology may not be available to all, WSW be the most humane?	CW: Yes	Generic	This is not a logical reason to consider humaneness. Without the justification, the remaining criterion is generic.
		A: Generic		



STEP 5

Apply Criteria to Solution Ideas

Students select their most promising Solution ideas 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.

Student Objective: To complete an evaluation matrix (grid) that uses the criteria from Step 4 to rank solution ideas to determine the best solution.

Scoring:

1. The step as a whole is scored for the Determination of Best Solution.

An accurately completed evaluation matrix (grid) will follow these guidelines:

- Considering one criterion at a time, each of the Solution ideas are ranked against all others using that criterion. The ranking is repeated for each of the criteria.
- In each column, Solution ideas are ranked from low to high (the highest number that equals the number of Solutions ideas in the grid). Team booklets should rank up to 8 Solutions, while Individuals rank up to 5.
- Each number is used once in each column.
- The ranks are added across the rows and the totals entered into the final column of the matrix.
- The Solution idea with the highest points must be used as the basis for the Step 6 Action Plan.

Special Techniques used in Grid

There are certain situations where students may employ special techniques to demonstrate their skill in using the problem solving process within the Evaluation Matrix.

- **Half Points** - If two ideas rank equally in satisfying a criterion, half points that are mid-way between the two ranks may be used. For example, two ideas that are equal and would have been ranked 5 and 6 may each be ranked 5.5.
- **Weighting Criterion** - The rankings for a single criterion may be weighted if it is especially important. In this case, each rank must show the weight; if double weighting is used the ranks would range from 2 to 16 (2 to 10 for individuals). Students are permitted to weight one Criterion of their choosing. An explanation of this decision should be included in the Action Plan.
- **Tie** - In the event of a tie for the Best Solution, only one can be the basis for the Action Plan. The students must choose to use only one. This decision should be addressed in the Action Plan. The method used for making the choice may be shown, but this is *not required*.

DETERMINATION of BEST SOLUTION measures the accuracy of completing the evaluation matrix (grid).

Scoring: 0, 7, 14, 20 points

- **0 points - Blank:** No student response provided.
- **7 points** - The presence of obvious manipulation:
 - Each row containing the same numbers across which ignores the problem solving process
 - Solution idea that scored the highest is not used as the main focus of the Step 6 Action Plan. This includes cases in which the highest-ranking idea and another idea of lower rank are combined in the Action Plan with equal weight.

NOTE: Other related ideas may be used as support, as long as they are not the primary scope of the Action Plan.

- **14 points** - There are mistakes present.
 - Numbering in the wrong direction for the entire grid
 - Using a number more than once in a column (except for half points).
 - Incorrect addition across a row.

NOTE: If there is mathematical error that effects the highest scoring solution and select the best solution according to the mathematical mistake, they receive 14 points.
- **20 points** - Evaluation Matrix is completed and added correctly.
 - Appropriate numbers in each column.
 - Rows are added correctly.
 - Highest scoring Solution is used as the basis of the Action Plan.
 - Add the totals of the final column. If the total is 180 for 8 solution ideas in the grid (75 for 5 ideas in the grid), it is most likely that the grid has been completed accurately.

BEST PRACTICES FOR GLOBAL ISSUES PROBLEM SOLVING EVALUATION

	Inaccurate Application	Grid Errors	Accurate Use
DETERMINATION of BEST SOLUTION	Displaying each row with same number, ignoring problem solving process, solution with highest total is not used as the main focus of the Action Plan, etc.	Errors such as numbering in the wrong direction, repetition of numbers in columns or incorrect addition	Matrix is completed and added correctly
Measures the accuracy in completion of the Evaluation Matrix (grid)			
	7	14	20



STEP 6 Develop an Action Plan

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

Student Objective: To develop an Action Plan based on the highest scoring solution idea explaining and demonstrating its relevance and importance to the UP and the Future Scene.

Scoring:

1. The Action Plan as a whole is scored for its Discussion of Criteria.
2. The Action Plan as a whole is scored for its Completeness.
3. The Action Plan is considered for its Clarity.
4. The Action Plan is scored for its Relationship to the Underlying Problem.
5. The Action Plan is scored for its Impact on the Future Scene.
6. The Action Plan as a whole is scored for its Humaneness.
7. The step as a whole is scored for Fundamental Concepts.

A well-written Action Plans vary widely in their structure, but include some or all of these elements:

- A. The AP **MUST** be based primarily on the Best Solution as identified in Step 5.
- B. The AP may first introduce the basic idea, similar to what was written about it in Step 3.
- C. The AP may include one or more of the other Solution ideas, as long as they are purely supportive and not a main scope.
- D. 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.
- E. The AP *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 UP, how/why it will have a positive impact on the Future Scene, etc.

1. **DISCUSSION of CRITERIA** measures the degree to which the criteria are addressed in the Action Plan.
 - Booklets scoring high in this area will present comparison with specific details of top scoring solutions on the grid in three or more criteria.
 - Students are encouraged to include the Discussion of Criteria in the first of two boxes provided for the Action Plan. However so long as there is information discussing criteria within Step 6, it must be scored, no matter where it is incorporated.

BEST PRACTICES FOR GLOBAL ISSUES PROBLEM SOLVING EVALUATION

	Developing	Proficient	Very Good	Exemplary
DISCUSSION of CRITERIA	AP does not address the criteria	AP's connection to criteria is minimal or unclear	AP makes some valid connections to criteria	AP addresses criteria in a convincing manner
Measures the degree to which the criteria are addressed in the Action Plan	2	4	6 8	10

2. **COMPLETENESS OF ACTION PLAN** measures the extent to which a complete strategy for implementing the Action Plan is described.

- An Action Plan that scores high in this area would fully describe the action to be taken and outline the Steps necessary to complete the plan.
- A complete picture of the Action Plan should be provided.
- A well-developed Action Plan is fully explained and elaborated.
- The Action Plan may explain obstacles that must be overcome to achieve its goal.
- It may also explain *why* and *how* the plan has a positive impact on the Future Scene.
- An Action Plan that simply restates the Solution idea from Step 3 would score as Developing.

	Developing	Proficient	Very Good	Exemplary
COMPLETENESS	Details are minimal; rewrite of Step 3 solution idea	Provides some considerations needed to carry out AP	Contains many elements of AP implementation	Presents organized, comprehensive explanation of process needed to achieve AP
Considers the extent to which the AP is thoughtfully elaborated	2 4	6 8 10	12 14 16	18 20

3. **CLARITY** examines effective communication of the Action Plan description.

- A clearly written Action Plan presents the action and its elaborated details concisely in a manner that is organized and easy to understand.

	Developing	Proficient	Very Good	Exemplary
CLARITY	Overall AP difficult to understand; wordiness confuses main idea or vague, takes leaps in reasoning	Fair; writing inconsistent; may be difficult to understand in places; some wordiness detracts	Good; contains mostly clear and concise descriptions	Excellent; clear, concise expression of ideas throughout AP
Measures clearness and conciseness of expression; effective communication of ideas	2	4	6 8	10

4. **RELATIONSHIP TO THE UNDERLYING PROBLEM** measures the extent to which the AP addresses the KVP and the Purpose. This considers whether the AP genuinely responds to the UP.

- Compare the Action Plan to the goals of the KVP and Purpose in the UP and then determine the extent of the relationship.
- Action Plan should successfully solve the Key Verb Phrase and fulfill the Purpose.

	Developing	Proficient	Very Good	Exemplary
RELATIONSHIP to UP	AP is unrelated to UP	AP addresses some aspects of UP	AP adequately considers KVP and Purpose of UP	AP effectively responds to KVP and Purpose of UP
Assesses the extent to which the AP solves the UP	2	4	6 8	10

5. **IMPACT ON THE FUTURE SCENE** measures the strength of the impact the AP will have on the FS.

- Action Plans scoring high in impact will make the Future Scene situation better for most of the stakeholders and create a positive effect for the future.

BEST PRACTICES FOR GLOBAL ISSUES PROBLEM SOLVING EVALUATION

- If the Underlying Problem scored low in Significance (Step 2), the Impact on the Future Scene score will most likely also be low.

	Developing	Proficient	Very Good	Exemplary
IMPACT on the FS	AP has a negative or no impact on FS	AP has minimal positive impact on FS	AP has moderate positive impact on FS	AP has strong positive impact on FS
Measures the positive effect of the AP on the FS situation				

6. **HUMANENESS** measures the productive, positive potential of the Action Plan as opposed to its destructive, negative potential.

- Consider the practical consequences of implementing the Action Plan when scoring this section.
- The humaneness of an Action Plan is scored *independently*. An Action Plan may score well in Humaneness while scoring poorly in other Step 6 criteria.

	Developing	Proficient	Very Good	Exemplary
HUMANENESS	Negative or destructive AP	AP is neutral; neither positive nor negative	Constructive potential evident	AP is positive and constructive
Measures the productive, positive potential of the AP				

7. **FUNDAMENTAL CONCEPTS** - Step 6 as a whole is scored for Research Applied, Creative Strength, and Futuristic Thinking as noted.

NOTE: If no work is submitted for the step a score of 0 will be given for Research Applied, Creative Strength and Futuristic Thinking.

The Step 6 total score is determined by adding together all points awarded for each of the components as indicated on the score sheet. There are no scoring differences between the Team, and Individual/MAGIC score sheets.

	Team/Individual/MAGIC Booklet
Discussion of Criteria	2-10
Completeness	2-20
Clarity	2-10
Relationship to UP	2-10
Impact on Future Scene	2-20
Humaneness	2-10
Research Applied	1-5
Creative Strength	1-5
Futuristic Thinking	1-5

Common Evaluation Issues for Action Plans

Action Plans are often wildly creative and can distract from how appropriately they solve the Underlying Problem. Several aspects of the Action Plan score are contingent on scores awarded earlier in the problem solving process. Below are several common concerns to keep in mind.

BEST PRACTICES FOR GLOBAL ISSUES PROBLEM SOLVING EVALUATION

Action Plan Concerns		
Concern	Description	Scoring
Two plans are presented	If an Action Plan has combined two or more <u>unrelated</u> Solution ideas, the result is essentially presenting two separate plans. (Ideas from other Solutions are allowed if they support the best Solution.)	Score only the first Solution.
Action Plan unrelated to the UP	It is possible for an Action Plan to be unrelated to the UP.	A score 2 is awarded for Relationship to the Underlying Problem
Action Plan unrelated to Future Scene	It is possible for an Action Plan to be completely unrelated to the Future Scene.	A score of 2 is awarded for Impact on the Future Scene.
UP has no Purpose	In Competitive Rounds, without a Purpose to support, an Action Plan is at a disadvantage to fulfill the needed attributes. Note: Evaluators should provide feedback that emphasizes the connection of the Action Plan to the Purpose of the UP.	<u>Relationship to the UP:</u> <ul style="list-style-type: none"> Score as Developing/Proficient if Action Plan has some relation to UP. <u>Impact on the Future Scene:</u> <ul style="list-style-type: none"> Score as Developing/Proficient if Action Plan solves some aspects of the FS.
KVP and Purpose are the same	In Competitive Rounds, without a Purpose to support, an Action Plan is at a disadvantage to fulfill the needed attributes. Note: Evaluators should provide feedback that emphasizes the connection of the Action Plan to the Purpose of the UP.	<u>Relationship to the Underlying Problem:</u> <ul style="list-style-type: none"> Score as Developing/Proficient if Action Plan has some relation to UP. <u>Impact on the Future Scene:</u> <ul style="list-style-type: none"> Score as Developing/Proficient if Action Plan solves some aspects of the FS.



FINALIZING SCORES

In Future Problem Solving points are awarded for student work submitted. We encourage our students to submit information even if it is incomplete. The only time that zero points are awarded for a step is if no student work was submitted.

The total booklet score is determined by adding all the points earned in each step. There are no scales to be applied nor penalties to be accounted for. Electronically evaluated booklets (using FPSONline or other Affiliate created score sheets) will tabulate the final score automatically.

Minimum Scores

Students that attempt work within a section of the booklet must typically receive the designated minimum score for each criterion in that section. Only steps that contain no student work are scored zero (0).

NOTE: There are certain areas of the within steps that may warrant a score of zero:

Step 1 – Originality

Step 2 – Structure

Step 3 – Originality

Step 4 - Correctly Written and Applicability

Ranking A ranking system is an effective way to compare booklets in a scoring sample. Using such a system, each evaluator scores a packet of booklets and then ranks each booklet according to the total points each booklet receives. Booklets are ranked from 1 (best) to the number of booklets scored. The evaluator should review the booklets before ranking to ensure there are no ties. Ties must be broken before applying ranks. Ranking booklets reduces scoring differences between tough and lenient evaluators. It also creates a “common language” for comparing booklets from different samples and for moving booklets on to the next round of evaluation.

Quality Terms

Quality terms are used by evaluators to indicate the quality of student work as a whole, accounting for the division. Packets of student work may include content that displays a range of experience. Quality term is not indicative of the quality of your packets, but on the quality of each booklet. All of the booklets in a packet may be “Very Good”, or more than one may be “Exemplary” or “Developing”.

Exemplary – Demonstrates mastery of the FPS process in each step of the booklet

Outstanding – Demonstrates mastery of some steps of the FPS process, and a solid understanding in the others

Very Good – Demonstrates competency throughout the booklet, but no mastery

Proficient – Demonstrates competency some, but not all, steps of the booklet

Developing – Demonstrates a basic understanding in some steps of the booklet

Evaluation Processes

Different topics (Competitive or Non-Competitive) and different rounds within a topic, have different expectations in terms of feedback and the amount of time for evaluating booklets. It is important to follow the specific instructions from the Evaluation Coordinator for each round of competition. Whether a Practice Problem or the International Conference, the rules should be applied consistently. The considerations that are made to identify a Relevant Challenge at the start of the year is the same at the end of the year. It is the topic, FS, and quality of student work that varies, not the application of the rules.

**Future Problem Solving
Junior Division****2020-2021 Practice Problem 2
Wearable Technology**

8:00 pm on September 24, 2052

Kristin and Xander Patel gather their wearable devices and sit down with their children, AJ and Maya. They are ready to experience the newest virtual reality competition, *Extreme Hoverboating*. One adult needs to sync in for every child because virtual reality can cause nausea. The family's Virtual Reality Console (VRC) syncs with each individual's wearable devices.

Before Xander can relax with the family, he checks in with work. There might be something that needs his attention. His employer required him to have a chip implanted in his wrist to monitor his work activities. This helps him learn from his minute-by-minute actions. His microchip is linked to his project management software. This allows him instant access to project updates, messaging, and even advice if he needs it. The implant tells him that his team is behind schedule. It offers suggestions for catching up. He moans in frustration at how work interferes in his private life. "Sorry kids, no VRC for Dad tonight. Work."

AJ groans. He knows that his dad's work won't let his chip sync with the VRC and his work at the same time. This means the family won't be experiencing *Extreme Hoverboating* tonight. The energetic 10-year-old, who has Type 1 diabetes, looks for a snack. AJ checks his blood sugar levels on his smartwatch. The watch displays his continuous glucose monitor (CGM), which uses data from his artificial pancreas. His artificial pancreas is designed to manage his insulin levels. He and his parents can access the CGM's data through their wearables. They still want AJ to ask their permission before he helps himself to a snack, though. The CGM is linked with the families' wearables. This has helped AJ to be better able to stabilize his blood sugar. He just doesn't like that his parents are alerted to his movements and actions at every hour of the day.

Kristin stretches after her run. She is training for a marathon. Her smart shirt measures her vitals. It tells her the energy she used and how much water she lost sweating. Her stats are transmitted to her coach. She receives an audio alert from her earrings, warning her that she has 45 minutes left to eat both carbohydrates and protein before missing her window for ideal refueling. Another alert appears: *Pantry door opened. Graham crackers removed*. Kristin is supposed to receive an alert whenever AJ enters the kitchen, not just when he opens the pantry. She sighs, and says into her watch, "Notify the sensor company. The sensor on the kitchen door isn't working." Details of the malfunction in the home system are transmitted for repairs to be made. She checks info from AJ's CGM. Seeing that his blood sugar level is stable, Kristin calls out to AJ, "You can have a snack – just a little peanut butter on the graham crackers, though – and make one for me, too." She guzzles some water.

Maya lounges on the floor in front of the TV. She is enjoying her new pair of RealAug contact lenses. They have the latest head nod interface. It allows the motion of her head to change what she's viewing. They can place an augmented reality onto what Maya sees around her. Earlier today, she used them to map and follow a new route home from school. Now she uses the contacts to scroll through her friends' social media posts. She sees an ad for a cute pair of jeans, virtually tries them on, and discards them. Another ad offers a pair that is better suited for her style profile. She likes them and posts a screenshot of her virtual self in the jeans to see what her friends think. Immediately a friend sees Maya's post, virtually tries the jeans on and purchases them, earning Maya a small payment. She wishes her parents would lift the limits on her account. Some of her friends are making more money because they're allowed to post directly on retail sites, not just on social media.

Many families have included wearable technology fully into their daily lives. Apply the problem solving process to identify the Challenges that users of wearable technology, like the Patel family, might face. Develop an Action Plan to address the integration of wearable technology into all aspects of their lives.