

PA STEM Regional Competition Rubric

Project Presentation

School Name: _____

IU Represented: _____

Phase 1: Device/Project Proposal (1000 word document (max) submitted prior to the regional competition)

	0 <i>No Evidence</i>	1 <i>Pre-Emerging</i>	2 <i>Emerging</i>	3 <i>Progressing</i>	4 <i>Advanced</i>
1.1 : Description of a real-world problem and need in the community	No description of a problem or need in the community was addressed.	A vague description of a problem is provided. The need in the community was not addressed.	A vague description of a problem is provided. The need in the community was addressed.	A detailed description of the problem is provided. Students elaborate on the need in the community by offering a solution not related to the problem.	A detailed description of the problem is provided. Students elaborate on the need in the community by offering a detailed solution pertaining to the noted problem.
1.2 : Local business / industry partnership and connection	Students do not identify any potential company partners.	Students identify a potential company partner. No indication was made to how students utilized partner in construction of prototype.	Students identify a potential company partner. Limited indication of how students utilized partner in construction of prototype.	Students identify and describe potential company partner. Detailed indication of how students utilized partner in construction of prototype.	Students identify and describe a potential company partner. Significant attempt made to explain the process team took to include how community partner added to value of prototype construction.
*1.3 : Budget documentation Limit = \$500 *Attach as separate document to proposal.	No budget attached. OR Budget exceeded the limit.	Budget presents with little details related to the prototype.	Detailed / itemized budget plan with price, quantity, and description of how the items were used in the prototype.		
1.4 : Plan and identification of the costs of improvement (\$750 at the state level)	There is no plan to identify the costs of improvement.	Students provide a generic plan to improve their project. There are no costs associated with this improvement.	Students provide a generic plan to improve their project. There are minimal costs associated with this improvement.	Students provide a detailed plan to improve their project. The costs are outlined but do not go into detail.	Students provide a detailed plan to improve their project. There are detailed costs associated with this improvement.

	0 <i>No Evidence</i>	1 <i>Pre-Emerging</i>	2 <i>Emerging</i>	3 <i>Progressing</i>	4 <i>Advanced</i>
1.5 : Written communication including conventions	No technical terminology was used or it was used inappropriately. Many grammar / spelling errors that interfere with the meaning.	Proposal used few technical terms as they applied to the need/problem and device / prototype. Some grammar / spelling errors that interfere with the meaning.	Proposal used some technical terminology as it applied to the need/problem and prototype/device. Few grammar / spelling errors that seldom interfere with the meaning.	Proposal used many technical terms as it applied to the need/problem and prototype/device. Few grammar/spelling errors that DID NOT interfere with meaning.	Proposal displayed command of technical terminology as it applied to the need/problem and prototype/device. No grammar or spelling errors.
1.6 : Research and Formatting	No research was presented throughout proposal. No in-text citations or proper works cited page exists.	Proposal contained limited use of external sources throughout. Little to no in-text citations or proper works cited page exists.	Proposal contained few external sources of research to back up content presented. Few in-text citations exist (with little to no errors in formatting) throughout proposal with an adequate works cited page housing external sources.	Proposal contained many external sources of research to adequately back up content presented. In-text citations exist (with no errors) throughout the proposal. The works cited page is noted and is showcased using proper formatting.	Proposal displayed significant external sources of research to showcase a proper backing of content presented. In-text citations are evident throughout the proposal with no errors. The works cited page is correctly formatted based on formatting guidelines and sources are listed in alphabetical order.
Totals	0 X __ = ____	1 X __ = ____	2 X __ = ____	3 X __ = ____	4 X __ = ____

Phase 1: Device/Project Proposal
Max 22 Points _____

Phase 2: Device/Project Presentation (20 minutes (max) during the regional competition)

	0 <i>No Evidence</i>	1 <i>Pre-Emerging</i>	2 <i>Emerging</i>	3 <i>Progressing</i>	4 <i>Advanced</i>
2.1 : Articulates purpose of device in addressing a local community need, how it benefits Pennsylvanians, and what research was used to justify recent improvements	The device does not address a problem in the local community, and its benefit to Pennsylvanians is not articulated. Device improvements are not supported by research.	The device addresses a problem in the local community, but its benefit to Pennsylvanians is not articulated. Device improvements are not supported by research.	The device addresses a problem in the local community, but its benefit to Pennsylvanians is not articulated. Device improvements are supported by research.	The device solves a problem in the local community and its benefit to Pennsylvanians is somewhat articulated. Device improvements are supported by research.	The device effectively solves a problem in the local community and its benefit to Pennsylvanians is clearly articulated. Device improvements are strongly supported by research.
2.2 : Explanation and presentation of Engineering Design Process	Students did not communicate the use of the Engineering Design Process.	Students communicated the Engineering Design Process, but do not demonstrate understanding of the steps.	Students communicated the Engineering Design Process. Students do not outline the steps of the Engineering Design Process in their presentation.	Students communicated the Engineering Design Process. Students provide vague outline of the steps of the Engineering Design Process in their presentation.	Students communicated the Engineering Design Process. Students provide detailed outline of the steps of the Engineering Design Process in their presentation.
2.3 : Craftsmanship and creativity of the device	Device displayed poor craftsmanship and did not appear to be age appropriate. Device did not display creativity in function and/or use of materials.	Device displayed limited/ below average craftsmanship and did not appear to be age appropriate. Device did not display creativity in function and/or use of materials.	Device exhibits adequate/ average craftsmanship and appeared to be age appropriate. Device displayed some creativity in function and use of materials.	Device exhibits quality/ above average craftsmanship and appeared to be age appropriate. Device displayed good creativity in function and use of materials.	Device exhibits exceptional craftsmanship and appeared to be age appropriate. Device displayed exceptional creativity in function and use of materials.
2.4 : Presentation and Communication of Engineering Journal Documentation (digital or analog)	No evidence of the team's ability to document the engineering design process in digital or written form.	Limited/vague detail provided in the documentation of the engineering design process in digital or written form.	Detail provided in the documentation of the engineering design process in written form. Picture/Drawings were not represented throughout the documentation.	Detail provided in the documentation of the engineering design process in written form. Picture/Drawings were represented throughout the documentation with little/no specifications noted.	Students demonstrate significant evidence of documentation of the engineering design process in written form. Graphics included throughout the journal were specific to the prototype and included specifications relative to project.
2.5 : Scale of the device and/or mass production	No mention or understanding of scale. No calculations were demonstrated for mass production.	Scale was mentioned, but understanding was not demonstrated. No calculations were demonstrated for mass production.	Scale was mentioned with minimal understanding. No calculations were provided, or were entirely inaccurate for mass production.	Scale was described with a moderate level of understanding. Calculations were simple and/or somewhat inaccurate for mass production of the device.	Scale was thoroughly articulated and demonstrated clear understanding. Calculations were sophisticated/ complex and accurate for mass production of the device

	0 <i>No Evidence</i>	1 <i>Pre-Emerging</i>	2 <i>Emerging</i>	3 <i>Progressing</i>	4 <i>Advanced</i>
2.6 : Plan identifying how to improve the device beyond the current scope, including associated costs	There is no plan to identify how to improve the device.	There is little evidence of a plan to identify improvement of the device or associated costs.	There is some evidence of a plan for improvement of the device and associated costs.	There is a definite plan for improvement of the device and associated costs, but lacks a few details.	There is a detailed plan for improvement of the device and associated costs.
2.7: Communication of Budget <i>Note: If budget exceeds the \$500.00 limit, then the written proposal score will be penalized as per rubric criteria.</i>	No budget communicated	A budget was presented with little detail	Detailed / itemized budget plan with price, quantity, and description of how item was used in the prototype.		
2.8 : Local business/ industry partnership and connections	Students do not provide the name of a local company and mentor. Students do not demonstrate understanding of a business/industry and STEM skill needed for success.	Students provide the name of a local company, but not of a mentor. Students do not demonstrate understanding of a business/industry and STEM skills needed for success.	Students provide the name of a local company and the mentor they interviewed. Students demonstrate very limited understanding of the business/industry and STEM skills needed for success.	Students provide the name of a local company and the mentor they interviewed. Students demonstrate an adequate understanding of the businesses/industry and STEM skills needed for success.	Students provide the name of a local company and the mentor they interviewed . Students demonstrate a detailed, thorough understanding of the business/industry and STEM skills needed for success.
2.9 : Visual/Media Graphics	No visual aids/ media were used.	No visual aids/ media were used, or use was a distraction from the content. .	At least one visual aid/ media was used to provide limited support for the content.	Visual aids/ media were used and provided some support for the content.	Visual aids/ media supported the presentation and did not distract from the content.
2.10 : Organization of content	Lack of organization and confusing flow of information.	Somewhat illogical or unclear organization and flow of information.	Adequate organization and flow of information.	Clear organization and flow of information.	Coherent and logical organization and flow of information.
2.11 : Presentation Skills	No presenters were fluent or confident.	One of the presenters was fluent or confident and dominated the presentation.	A few of the presenters were fluent and confident.	The majority of the presenters were fluent and confident.	All of the presenters were fluent, confident, poised and enthusiastic.
Totals	0 X__ = ____	1 X__ = ____	2 X__ = ____	3 X__ = ____	4 X__ = ____

Phase 2: Device/Project Presentation

Max 34 Points _____

Phase 3: Project in a Box / 4C's (to be completed following Phase 2 of the regional competition)

	0 <i>Pre-Emerging</i>	1 <i>Emerging</i>	2 <i>Proficient</i>	3 <i>Advanced</i>
3.1 : Communication	Language was exclusionary Language was unsupportive of actions and ideas.	Language was exclusionary Language was supportive of actions and ideas.	Team members used positive language. Language was supportive of actions and ideas.	Team members used positive language to support their project. Team members reassured and supported one another's actions and ideas through visuals and technology.
3.2 : Collaboration	No roles were established. No team collaboration	One or two team members dominated the challenge. No roles were established. No team collaboration.	All team members were involved in the project.	All team members were involved in the project. Clear roles were established. Team collaboration was evident throughout the challenge.
3.3: Critical Thinking	Little to no problem solving and critical thinking took place. Teams displayed little to no determination and perseverance at the task/challenge.	Some problem solving and critical thinking took place.	Problem solving and critical thinking skills clearly took place.	Teams clearly demonstrated the ability to problem solve and apply critical thinking skills throughout the task. Teams displayed perseverance and determination.
3.4: Creativity	Students demonstrated no creativity throughout challenge.	Some creative measures were developed. Little to no follow through was demonstrated around these creative measures.	Students showcase a moderate amount of creativity. The group does not take a risk and use this creativity in the product of the challenge.	Students showcase a design that is unique, engaging, and innovative. Students clearly use this creativity to help drive the product of the challenge.
Totals	0 X__ = ____	1 X__ = ____	2 X__ = ____	3 X__ = ____

Phase 3: Project in a Box / 4C's

Max 12 Points _____

Total Summary of Points

Phase 1: Device/Project Proposal _____ **out of 22**

Phase 2: Device/Project Presentation _____ **out of 34**

Phase 3: Project in a Box / 4C's _____ **out of 12**

Total Points _____ **out of 68**