JOBS1st PA STEM State Competition Rubric

Phase 1A. Device/Project Proposal Revised (1000 word document (max) submitted prior to the state competition)

	0	1	2	3	4
1.A.1. Description of a real-world problem	No description of a problem or need in the community was defined.	A brief description of a problem or need in the community was defined.	A Limited description of a problem or need in the community was defined.	A Satisfactory description of the problem or need in the community was defined.	A Detailed description of a problem or need in the community was defined.
1.A.2. Identification of community need	No community needs have been identified.	One community need has been identified.	Two community needs have been identified.	Two or more community needs have identified and a way to improve the community.	Two or more community needs have identified and multiple ways to improve the community.
1.A.3. Use of engineering processes and principles	No evidence of the team's ability to adhere to the engineering design model of: think, create, test, reflect, and change.	Limited evidence of the team's ability to adhere to the engineering design model of: think, create, test, reflect, and change.	Some evidence of the team's ability to adhere to the engineering design model of: think, create, test, reflect, and change.	Good evidence of the team's ability to adhere to the engineering design model of: think, create, test, reflect, and change.	Outstanding evidence of the team's ability to follow engineering model: think, create, test, reflect, and change.
1.A.4. Budget documentation **Limit = $750 or $1,250 total Exceeding the limit (-20 pts)**	No budget attached.	A budget was presented with little detail.	A budget was presented with adequate detail and knowledge of the project.	A budget was presented with great detail and knowledge of the project.	Detailed / itemized budget plan with price, quantity, and description of how the items were used in the prototype.
1.A.5. Plan and identification of the costs of improvement **(Beyond the competition)**	There is no plan to identify the costs of improvement.	There is little evidence of a plan to identify the costs of improvement.	There is some evidence of a plan to identify the costs of improvement.	There is a definite plan to identify the costs of improvement.	There is a detailed plan to identify the costs of improvement.
1.A.6. 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.

Totals	0 X__ = ____	1 X__ = ____	2 X__=____	3 X__=____	4 X__=____

Device/ Project Proposal Total Points Earned	___ out of 24

Phase 1B. Device/Project Presentation (20 minutes)

	0	1	2	3	4
1.B.1. Knowledge of device, addresses a problem in the community, benefits Pennsylvanians and justifies 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.
1.B.2. Understanding of STEM skills and processes used to identify areas of improvement	Students do not demonstrate understanding of the STEM skills required to develop and improve the device; did not outline STEM related skills/ processes.	Students demonstrate basic understanding of the STEM skills required to develop and improve the device, outlining only **1** specific STEM related skills/ processes.	Students demonstrate some understanding of the STEM skills required to develop and improve the device, outlining **2** specific STEM related skills/ processes.	Students demonstrate clear understanding of the STEM skills required to develop and improve the device, outlining **3** specific STEM related skills/ processes.	Students demonstrate clear understanding of the STEM skills required to develop and improve the device, outlining **4** specific STEM related skills/ processes.
1.B.3. Appearance 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.
1.B.4. Identification of the improvements made to device performance	Device does not represent thoughtful re-design and no improvements were evident.	Device represents thoughtful re-design, but improvements were minimal.	Device represents thoughtful re-design and show noticeable performance improvements, but either did not make appropriate use of materials, or did not adequately match the specs in the project plan.	Device represents thoughtful re-design, appropriate use of materials, and adequately matched the specs in the project plan. Device showed significant performance improvement.	Device represents thoughtful re-design and attention to detail, appropriate use of materials, and exactly matched the specs in the project plan. Device showed exceptional performance improvement.
1.B.5. Scale of the device	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.

Phase 1B. Device/Project Presentation (20 minutes) CONTINUED

	0	1	2	3	4
1.B.6. Local business/ industry connections	Students do not identify any potential company partners. Students do not demonstrate understanding of businesses, industries and STEM skills needed to produce their device for consumers.	Students identify a potential company partner. Students do not demonstrate understanding of businesses, industries and STEM skills needed to produce their device for consumers.	Students identify a potential company partner. Students demonstrate very limited understanding of the businesses, industries and STEM skills needed to produce their device for consumers.	Students identify multiple potential company partners. Students demonstrate an adequate understanding of the businesses, industries and STEM skills needed to produce their device for consumers.	Students identify a comprehensive list of potential company partners. Students demonstrate a detailed, thorough understanding of the businesses, industries and STEM skills needed to produce their device for consumers.
1.B.7 Delivery methods	Lack of organization and confusing flow of information. No use of research or data. No visual aids/ media were used.	Uses some but not all of the below components - Missing 1 or more components: Limited use of research or data. Visual aids/ media were used, or use was a distraction from the content.	Adequate organization and flow of information. Some use of research or data to garner support. At least one visual aid/ media was used to provide limited support for the content.	Clear organization and flow of information. Some use of research or data to garner support. Visual aids/ media were used and provided some support for the content.	Coherent and logical organization and flow of information. Concise and relevant use of research and data to garner support. Visual aids/ media supported the presentation and did not distract from the content.
1.B.8. Oral communication	Presenters did not demonstrate use of appropriate and technical terminology. Presenters were not fluent or confident. Presenters did not display acceptable posture, body position, and/or volume of their voice.	Uses some but not all of the below components - Missing 1 or more components: Presenters demonstrated limited command of appropriate terminology. Presenters were somewhat fluent or confident. Presenters had acceptable posture, body position, and the volume of their voice was audible.	Presenters demonstrated command of appropriate and technical terminology. Presenters were somewhat fluent and confident. Presenters had an adequate posture, faced the panel, and the volume of their voice was acceptable.	Presenters demonstrated command of appropriate and technical terminology. Presenters were fluent and confident. Presenters had an upright posture, faced the panel, and projected their voice.	Presenters demonstrated command of appropriate and technical terminology. Presenters were fluent, confident, poised and enthusiastic. Presenters had an upright posture, made eye contact with the panel, and projected their voice.
Totals	0 X__ = ____	1 X__ = ____	2 X__=____	3 X__=____	4 X__=____

Device/ Project Presentation Total Points Earned	___ out of 32

2. Building a Stronger PA Presentation (5 minutes)

	0	1	2	3	4
2.1. STEM business/ industry opportunities	Did not identify essential STEM related skills / careers in PA.	Little identification of essential STEM related skills / careers in PA.	Some identification of essential STEM related skills / careers in PA.	A good amount of identification of essential STEM related skills / careers in PA.	A high level of identification of essential STEM related skills / careers in PA.
2.2. Identification of how STEM is used to solve community challenges, now and in the future	No current STEM challenge, potential solution/ improvement, or future opportunity is identified.	One current STEM challenge is identified, but either a potential solution/ improvement or future opportunity is not.	One current STEM challenge, potential solution/ improvement, and future opportunity is identified.	Multiple current STEM challenges, potential solutions/ improvements, and future opportunities are identified.	A wide variety of current STEM challenges, potential solutions/ improvements, and future opportunities are identified.
2.3. Explanation of how research influenced device/ STEM best practices utilized	No research cited, no mention of its influence.	A passing mention of research or influence.	Students somewhat utilized research and/or explained influence.	Students provide a clear explanation of research and or influence.	A thorough explanation of research with a comprehensive connection to how it influenced the project.
2.4. Skills/ training needed to fill essential STEM jobs in the community	No skills/training identified.	Limited identification of skills/training needed.	Identified skills/training needed, but did not articulate why they are needed.	Clearly identified multiple skills/ training needed, and articulated why they are needed.	Comprehensive identification of skills/training needed, thorough articulation of why they are needed.
2.5. Team reflection	No explanation of team member's roles.	Aware of team member's roles.	Knowledge of the team member's roles and responsibilities.	Understanding of the team member's roles and responsibilities.	Identification of each team member's contributions and strengths.
2.6. Delivery methods	Lack of organization, confusing flow of information, and no use of visuals/ media.	Uses some but not all of the below components - Missing 1 or more components: Adequate organization and flow of information, and use of visuals/ media.	Adequate organization, flow of information, and use of visuals/ media.	Clear organization and flow of information, and supportive use of visuals/ media.	Coherent and logical organization and flow of information, and supportive use of visuals/ media.
2.7. Oral communication	Presenters did not appear confident and did not display acceptable posture, body position, and/or volume of their voice.	Uses some but not all of the below components - Missing 1 or more components: Adequate confidence, acceptable posture, acceptable body position, and the volume of their voice was audible.	Presenters appeared somewhat confident, had an adequate posture, faced the panel, and the volume of their voice was acceptable.	Presenters appeared mostly confident, had an upright posture, faced the panel, and projected their voice.	Presenters appeared confident, had an upright posture, made eye contact with the panel, and projected their voice.
Totals	0 X__ = ____	1 X__ = ____	2 X__=____	3 X__=____	4 X__=____

STEM in Your Community Total Points Earned	___ out of 28

JOBS1st PA STEM State Competition
Summary Sheet

School Name _____
IU _____
Date _____
Time _____

1a. Project Proposal Rubric Max 24 Points	
1b. Device/ Project Presentation Skills Max 32 Points	
2. Building a Stronger PA Max 28 Points	
Final Totals Max 84 Points	

Judge Signature _____