



Indiana Department of Education 2023-2024 STEM Integration Grant Application Wording for 1st Maker Space

NEW: 2023-2024 STEM Integration Grant Application Now Open

Applications for the 2023-2024 STEM Integration grant are now open. This competitive grant opportunity is designed to improve elementary and secondary student achievement and participation in STEM learning experiences. It is available to all public school corporations, charter schools, and accredited non-public schools. More information regarding the application process can be found [here](#). The application deadline is 4 p.m. ET on Wednesday, May 10. Contact IDOE's Office of Teaching and Learning with any questions.

****There are seventeen sections to complete the STEM grant application. This wording is specific to sections 7, 8, and 13 and how 1st Maker Space can meet the requirements for this grant. ****

Section 7:

STEM Priority 1: Refine STEM pedagogy with research-based best practices.

- **XYZ school** has selected the 1st Maker Space curriculum and professional development to assist in designing, implementing, and sustaining a makerspace/STEM Lab.
- Research and workforce development data support the need for makerspaces. According to a research brief by Hanover Research, makerspaces improve student learning by developing skills that contribute to their personal growth and engagement. Makerspaces engage students by providing hands-on experiences for students to design and create projects through a variety of physical and digital tools. Makerspaces help students develop Employability Skills, including problem-solving, critical thinking, creativity, innovation, active learning, and technology use (World Economic Forum, 2020).
- Researchers at the BSCS Center for Research and Evaluation conducted a laboratory-based randomized control experiment to measure the effects of inquiry-based teaching compared to commonplace teaching. The BSCS 5E Model was used for inquiry-based teaching, and national teacher survey data was used to determine commonplace education. The students were taught by



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the same teacher and towards the same learning goals, so the content was the same. Wilson, Taylor, Kowalski, and Clarkson found that students in the inquiry-based group performed significantly better than students receiving regular instruction (2009). Additionally, students taught with commonplace teaching methods had gaps in their knowledge by race, and those taught using inquiry-based methods did not.

- Sources:
 - Impacts of Makerspaces on Student Engagement. Hannover Research. <https://drive.google.com/file/d/1Qa9rcqpN2jPTD0tBggjGxcQOqq1IM6zS/vi>
[ew](https://drive.google.com/file/d/1Qa9rcqpN2jPTD0tBggjGxcQOqq1IM6zS/vi)
 - “Makerspace in Our School Curriculum.” Watson Institute, December 2018. <https://www.thewatsoninstitute.org/makerspace-special-education-initiative/>
 - “The Future of Jobs Report 2020.” World Economic Forum. <https://www.weforum.org/reports/the-future-of-jobs-report-2020/in-full/infographics-e4e69e4de7/>
 - Wilson, C. D., Taylor, J. A., Kowalski, S. M., & Carlson, J. (2009). “The Relative Effects and Equity of
 - Inquiry-based and Commonplace Science Teaching on Students Knowledge, Reasoning, and Argumentation.” *Journal of Research in Science Teaching*. DOI: 10.1002/tea.20329
- **XYZ School** will develop a makerspace to allow students to develop employability skills, including perseverance and problem-solving. The makerspace will be a hub for student creativity. It will support a well-rounded education for all students by helping them see the connections between all subject areas through making. 1st Maker Space will provide a personalized consultation and layout plan to meet the needs of **XYZ School**. 1st Maker Space will also provide a customized implementation plan, including a curriculum aligned to the Indiana Academic Standards and NGSS and on-site professional development. The 1st Maker Space Elementary, Middle School, and High School Maker Curriculum was designed with makerspaces, project-based learning, and fun in mind. Each lesson aligns with the Indiana Academic Standards, Indiana Employability Skills Framework, NGSS, and STEM Careers. These lessons showcase how to combine several subjects and academic standards to create worthwhile, complete products that students are interested in making.
- Explain why your team selected the identified curriculum/program.



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STEM Priority 2: Develop STEM leaders and educators.

- **XYZ School**, in partnership with 1st Maker Space, will develop STEM leaders and educators through provided professional development. This professional development integrates makerspace equipment into the classroom by connecting the maker mindset to current projects, Indiana Academic Standards, NGSS, and lesson plans. The 1st Maker Space Education Services team will ensure educators gain the knowledge to successfully use the equipment and implement STEM pedagogy into the daily schedule. 1st Maker Space will also provide opportunities for staff to participate in the Maker Manager Program. This virtual cohort provides participants with knowledge about the history of making, assessment in a makerspace, and much more and offers a network of educators and leaders who are building active maker communities.
- **Add any building-wide strategies.**

STEM Priority 3: Increase access to STEM courses, programs, and resources.

- Empirical evidence suggests that makerspaces help special education students develop problem-solving, creative thinking, communication, and vocational skills (Watson Institute, 2018). There are **XXX** students with special needs or underrepresented groups at **XYZ School**, and the makerspace will be used to allow students to master complex academic concepts through collaborative, hands-on learning. The makerspace will also engage students in collaborative, community-based problem-solving through projects at every grade level.
- **Explain how XYZ will ensure that all students in your targeted grade levels will have access to proposed STEM courses.**

Section 8:

- **XYZ School**, in partnership with 1st Maker Space, will develop STEM leaders and educators through provided professional development. This professional development integrates makerspace equipment into the classroom by connecting the maker mindset to current projects, Indiana Academic Standards, and lesson plans. The 1st Maker Space Education Services team will ensure educators gain the knowledge to successfully use the equipment and implement STEM pedagogy into the daily schedule. 1st Maker Space will also provide opportunities for staff to participate in the Maker Manager Program. This virtual cohort provides participants with knowledge about the history of making and assessment in a makerspace and offers a network of educators and leaders building active maker communities.
- **Indicate who will participate in the training**
- **Provide a detailed timeline for the teacher training**



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Section 13:

- As a part of the consultation with 1st Maker Space, 1MS will create a sustainability plan for years two, three, and beyond to ensure the makerspace remains successful. This includes replacing consumable materials and additional professional development.
- Planning 5% of your overall makerspace budget for consumables each year is typical. Describe how you will sustain the STEM program after the grant funds are exhausted.

If additional help is needed in the grant writing process, please email Amber Hudson, VP of Educational Services, at amber@1stmakerspace.com.



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