MarTREC
Maritime Transportation Research & Education Center

BIL MarTREC Tier 1 UTC Project Request Form
Completed form should not exceed 2 pages

Submission Date: 12/2/2024
Lead Recipient/Grant Number: University of Arkansas / 69A3552348331
Principal Investigator Institution:
Center Name: Maritime Transportation Research and Education Center
USDOT Research Priority: Preserving the Existing Transportation System
Primary USDOT Strategic Goal (*select drop down*): Economic Strength and Global Competitiveness
Principal Investigator(s) with ORCID(s) and Contact Information: Gary Prinz, ORCID: 0000-0003-2579-3214, phone: 479-575-2494, email: prinz@uark.edu
Project Partners: Adriane Hapgood, Root Elementary School
Project Type (*select drop down*): Education and Workforce Development
Project Research Topic Type (*select drop down*): Maritime Sustainable and Resilient Infrastructure
Transportation Modes Involved (*check all that apply*): ☒Waterway ☒Road ☐Rail ☐Pipeline ☐Other
Research Project Funding: *$33,000 in Federal funding, $16,812 in non-Federal funding, Total funding = $49,812.*
Project Start and End Dates (Format month/day/year to month/day/year): 1/01/2025 to 12/31/2025
Project Title: An Elementary School STEMusical: Exciting the Future of STEM
Project Abstract (Brief Description): This educational outreach project will build upon past efforts to educate and excite future science, technology, engineering, and math (STEM) leaders at the elementary school level (K-4). Partnering with educators at Root Elementary School in Fayetteville Arkansas, the project will create an updated STEMusical theatrical program centered around maritime engineering challenges (lock passage, barge impact, dredging operations, etc.), exciting elementary grade students about engineering through an entertaining, informative, and memorable experience. The project will develop and execute in-class experiential learning exercises that educate, while the created STEMusical lyrics and music will assist in knowledge retention. A total of two public student performances of the developed STEMusical will be held by the conclusion of the project and commercialization efforts will be undertaken to expand the developed STEMusical program to schools nationwide.
USDOT Priorities: The proposed project will educate, inspire, and excite elementary school children (i.e. kindergarten through 4th graders) on maritime-themed STEM topics and create enthusiasm for future opportunities in STEM fields. The project will develop innovative engineering outreach curriculum and focus on introducing young students to exciting maritime transportation and engineering concepts (lock passage, barge impact, dredging operations, etc.), while reinforcing the fun concepts through a developed musical performance outreach program. Titled “An Elementary School Maritime STEMusical” the developed theatrical performance will intertwine maritime engineering themes with a theatrical script and songs to convey facts, principles, and engineering history to a broad audience.
Outputs (results of the work performed): The developed STEMusical outreach project will result in a plug-and-play curriculum package for school districts across the country to help excite elementary aged children to the wonders of maritime engineering and STEM fields. This curriculum will interact with existing school district music programs.
Outcomes/Impacts: Contributions of the proposed project are immeasurable; however, it is anticipated that excitement for engineering (and STEM fields in general) will increase amongst the participating

elementary age children, while making students aware of the importance of maritime engineering and the inland waterway networks.
Technology Transfer Activities: The STEMusical script, lyrics, experiential learning modules, and promotional materials will be packaged for commercialization and an informative website will be created. Commercialization is important for dissemination of the research products to a broader audience (other school districts throughout the US).
Final Research Report: Upon completion of the project, provide a URL link to final report will be provided
Project Deliverables: ☒ PI agrees to submit all deliverables within 4 weeks after the project end date.
Data Management Plan (DMP): ☒ PI has reviewed and agrees to adhere to MarTREC DMP. Proposed project DMP must be attached to the submission email along with this form.
Center Director Approval Signature and Date:  12.23.24