



2021 Storytime STEM-packs™ Professional Development for Iowa STEM Scale-Up



In 2021, Storytime STEM-packs™, an educational innovation developed by the Math & Science Collaborative at the Allegheny Intermediate Unit, was chosen by the Iowa Governor's STEM Advisory Council to become a STEM program provider for the Iowa STEM Scale-Up Program 2021-22'. Storytime STEM-packs are designed to connect children's literature with STEM. They enable educators of young children to successfully incorporate age-appropriate STEM+C concepts into children's programming. In recognition of how effective and engaging Storytime STEM-packs are for STEM and computer science learning, the program was chosen from over 100 applicants to be one of only thirteen STEM providers awarded this distinction in Iowa for 2021-22.

The Iowa STEM Council made a total of 730 Storytime STEM-pack awards, providing a customized collection of Storytime STEM-packs™ specifically targeting PK-2 mathematics, science, engineering design, and computer science concepts. Each award packet contained one Storytime STEM+C Adventure - either Earth Day, Dragonland, or Moon Adventures - as well as one mathematics and one science/engineering design Storytime STEM-pack. During July and August 2021, Storytime STEM-packs conducted virtual synchronous professional learning for 630 Iowa educators, who were the recipients of these awards.

A Storytime Adventure has five 45-minute STEM+C challenges based on popular children's books

3 popular children's books

6 Bee-Bots + 1 Docking Station

6 themed vinyl mats

Hands-on learning materials and cards

Facilitator guides

PreK-2 An Adventure contains everything you need for 5 challenges and 24 children

Storytime STEM +C Adventure Materials

Storytime STEM-packs conducted a total of 17 professional development sessions (7 Earth Day Adventures, 5 Moon Adventures, and 5 Dragonland Adventures sessions). The 2.5-hour professional development was customized to provide support on the specific Adventure and STEM-packs the educators had selected. Customization for the different mathematics and science/engineering design Storytime STEM-packs was integrated through twenty-minute interactive asynchronous videos. Throughout the Zoom

sessions participants had the opportunity to work in small groups in breakout rooms. They also used interactive virtual tools, such as the Terrapin Bee-Bot emulator, customized Google jamboards, for example the jamboard



Google Jamboard – Dragon-Bot Returns to the Cave

of Dragon-Bot returning to the cave, Google slide decks, as well as Desmos. Classroom photos and video examples from children working with Storytime STEM Adventures and STEM-packs provided an opportunity for participants to not only engage in the activities as adult learners, but also see them being implemented in the classroom, preschool, or out-of-school settings.

Educators were given the opportunity to complete a short survey at the end of their professional learning session, providing a response to two questions. (1) What did you take away from today's PD that was most helpful? (2) What do you still need to feel more comfortable in facilitating your Adventure and Storytime STEM-packs?

Out of 630 participants, 490 (68%) responded to the survey. Responses to the question “What did you take away from today's PD that was most helpful?”, fell into several main themes. Almost half of the respondents (n=220) commented on how helpful it was to see the Storytime STEM-packs in use, with examples and in-depth explanations of how to facilitate them and ways in which they can be integrated into existing curriculum. Ninety-seven (97) respondents commented on how helpful it was to be able to practice with the Bee-Bot robots; many specifically mentioned the on-line Bee-Bot emulator. About twenty educators appreciated that Storytime STEM-packs are fun and engaging for kids or easy to use, followed by comments about the features of

STORYTIME STEM-PACKS Making your space suit

PROTECTING THE ASTRONAUT



Our Plan for the Inner and Outer Layer of the Space Suit

Reconsider your choice of materials based on the testing results and construct your astronaut and space suit using your chosen materials on the [Jamboard](#). The results of the medium rock testing are included in the last frame of the Jamboard.

Be sure to include an explanation of your choices.

Making a Spacesuit Virtual Engineering Challenge

Storytime STEM-packs, such as the literacy connections, the interdisciplinary nature, the standards-alignment, and the overall design framework of the STEM-packs.

About 20 participants commented on how helpful the virtual PD and the videos were and over 20 respondents specifically expressed that this was great PD. That sentiment is exemplified in the following quote: “I feel ready to teach each of the kits that I will receive. This is the best PD that I have done over the years for the STEM awards. I appreciate the time you put into preparing for and teaching this PD. Thank you!”

Responses to the question “What do you still need to feel more comfortable in facilitating your Adventure and Storytime STEM-packs?” fell into two main themes. Over 200 surveyed educators stated that they don’t need anything. Another 192 stated that all they still needed were the materials and a chance to explore and/or practice with them. Combining these two categories of responses, the overwhelming majority of participants felt comfortable facilitating their Storytime STEM Adventures and Storytime STEM-packs as a result of the virtual professional development. Remaining responses indicated that participants need contact information and possible support in the future (n=26), the video links (n=16), and collaboration with colleagues at their site (n=5). Six educators stated that they wished they had the materials before the professional development. In summary, responses to the second question indicated that educators felt well prepared to facilitate their chosen Storytime STEM Adventure and STEM-packs.



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