JUDA SCHOOL DISTRICT

4K-12 STE^M for Everyone!

Presenters:

Jackie Klar – STEAM Coordinator and Middle Level Specialist
STEAM IN ACTION – Juda Pride
Our story...

➔ STUDENTS
   ◆ 310 PreK - 12 students in one building
   ◆ Grade sizes range 17 - 36

➔ STAFF
   ◆ One grade level teacher
   ◆ Middle and high school teachers have 6-7 preps, specialists more
   ◆ Wear several hats!

➔ DISTRICT
   ◆ One-third of our student population is open-enrolled!
   ◆ Small budget - under $3.5M for the district
   ◆ Passed a referendum for building and operational in 2016
How we got started...

➔ Simple conversation starting between the Math & Science staff about showing true STEM Problem Solving
➔ About reaching all the students (not 1 class or here or there) in a real world
➔ About showing students STEM is beyond simple Math & Science
Why getting started was important....

→ WHY STEM?
  ◆ More STEM jobs
  ◆ Science takes back seat to Math/ELA (especially 4k-5)
  ◆ Conversion to NGSS

→ FUNDING CHALLENGES
  ◆ Grants, grants, grants
  ◆ Sponsorship (avoid F -word -- Fundraising) Business partnerships

→ EARLY PROJECTS
  ◆ Rube Goldberg
  ◆ Mousetrap Cars
  ◆ Solar Panels
Why getting started was important....

➔ Lives Matter
➔ Think Critically
➔ Belief that they CAN solve tough Problems
➔ Employable for the future
Year 1 – Small $$

➔ King of the Hill!
  ◆ MIT project
  ◆ Core STEM team working
  ◆ ~$300 total for 100 students

➔ Return-On-Investment
  ◆ Habit of Mind Attitude
  ◆ Soft Skills!!!
    ● Problem Solving
    ● Persistence
Our first big grant...

➔ MONSANTO
  ◆ Farmer nominated
  ◆ Grant writing team - little grant writing experience
  ◆ $10,000!!

➔ BIGGEST STUDENT IMPACT
  ◆ Decide on what grades/number of students
  ◆ How would we run projects so that every student had opportunity?

➔ PROJECT
  ◆ Solar cars
  ◆ Robot Rumble (Tetrix Robotics Kits)
ROBOT RUMBLE...

➔ Project design
  ❧ What’s the goal?
  ❧ How to put students in teams - what criteria?
  ❧ When do they work on it?

➔ We had a lot of questions with this first one!
ROBOT RUMBLE...

→ **Instruction**
  ◆ Little to none – why???
  ◆ Google doc for questions/answers
  ◆ Homeroom teachers just supervised

→ **Process**
  ◆ Introduce Gear project –
  ◆ How many weeks to work time?
COMPETITION ROBOT RUMBLE...
SOLAR CAR...

➔ MS worked in groups of 2
➔ More instructions included with kit
WE WON TWICE!!!

➔ WROTE 2ND MONSANTO GRANT
  ♦ What could we do to utilize the materials previously purchased?
  ♦ How could we expand into the elementary?

➔ ARDUINOS
  ♦ Added computer science component to project
  ♦ Our students have little to no programming experience

➔ LEGO MINDSTORMS
  ♦ Middle school project
STEM THEN, STEAM NOW...

➔ We are now STEAM
  ♦ Added Art & Business

➔ Partnership with UW–Platteville I² Stem
  ♦ Working more mini projects into our classrooms

➔ Current STEAM/Engineering Classes
  ♦ CAPP Engineering Class
  ♦ Middle School Rotation Classes
A big learning experience, programming arduinos! Started more complex, moved to more basic task. This was, in large part, student solved!
LEGO MindStorms in 8th Grade

➔ We put a portion of the grant winnings into 10 MindStorm kits.
➔ 8th graders worked with a partner to build and program a robot that would push another robot out of a circle.
Rocketry in 7th Grade

➔ We have a sponsor who has donated rocketry supplies to our students for 10 years.
➔ Mrs. Klar does rocket club one night a week in addition to working with the 7th graders on their STEAM project.
Solar Cars in 6th Grade

➔ Reused solar car kits from previous year
➔ Worked in partners with little to no direction from advisors
➔ Competition – How far in 30 seconds?
WE WON THREE TIMES!!!

➔ WROTE 3RD MONSANTO GRANT
  ✦ Let’s SERIOUSLY put our focus on Elementary, this time!

➔ Rokenboks, Hand2Mind, Ozobot
➔ Quality 3D Printer
➔ We now have a STEAM Coordinator (not part of the grant, but necessary to bring STEAM to all students)
Annual Keynote Speakers

2018–2019:
Thomas Goudreau
Lockheed–Martin, Virginia
Rocket Club Sponsor
OTHER STEAM IN OUR SCHOOL

➔ STEAM Museum
➔ Rocket Club
  ✦ RockSim
➔ Odyssey of the Mind
➔ Hour of Code

➔ Importantly - more staff integrating into more classes
Rocket Club
PARTNERED WITH CODE.ORG...

➔ Students previous experience with Hour of Code

➔ Staff trained over the summer
  ✦ Coding in Algebra
  ✦ Coding in Science
  ✦ Elementary Coding
  ✦ High School Computer Science
STEAM TRAINING

➔ Three years focused on integrating STEAM 4K-12
➔ Four Years for Mrs. Prigge and Mrs. Klar

➔ Staff trained over the summer, 2 weeks for 3 summers
  ♦ UW– Platteville
    ● Mathalicious
    ● ETA– Hand2Mind
    ● Mindsets
Dr. Jodean Grunow and ETA Grant

→ Hand2Mind Trials
  ✦ Gus and Nia’s Shaking Adventure
  ✦ Coding Mouse Exploration
  ✦ Seed Rescue
  ✦ Design a Toy
Habits of Mind

➔ What are Habits of Mind?
➔ Why is it important?
➔ How does STEAM help promote Habits of Mind?
STEAM FUTURE...

➔ MAKERSPACES
  ◆ Learning Commons
  ◆ Classrooms
  ◆ After school STEAM club

➔ STEAM Lab
  ◆ 3-D printing

➔ ADDITIONAL CLASSES
  ◆ AP Computer Science
  ◆ Applied STEAM in MS
Training the Trainers...

➔ STEAM TEAM
  ◆ UW Platteville

➔ Teachers in House
  ◆ STEAM in Elementary

➔ Teacher to Teacher
  ◆ WTI
  ◆ WMC

➔ Partner Organizations
  ◆ Code.org
  ◆ UW–Platteville
  ◆ Technical Schools
Training the Trainers...

- Move STEAM into the elementary classrooms weekly
- Family STEAM Night

And beyond...

- the doors
  - community garden
  - take home backpacks
FUNDING RESOURCES...

➔ GRANTS
  ♦ Donors Choose
  ♦ Monsanto, WI Work Force
  ♦ Teach Grant
  ♦ WTI
    ● Thank you to John and Tashia Morgridge!

➔ LOCAL BUSINESS
  ♦ Manufacturing/Machine shops

➔ ORGANIZATIONS
  ♦ Lions Club, Optimist, etc.
Generous People Support

➔ Parents
  ◆ Very generous at ask!
➔ Grandparents
  ◆ Time
  ◆ Monetary
➔ Individual Sponsors
  ◆ Rocket Club
➔ Teachers
  ◆ Out of pocket materials
WE WON Four TIMES!!!

➔ WROTE 4th MONSANTO GRANT

◆ A bit unbelievable but we are overjoyed to keep expanding!
This time the focus becomes community outreach.

- Take Home STEAM Backpacks
- Community Garden
- Raspberry Pi/Maker Club
  - Jackie Klar is certified Pi educator
  - 13 kits on hand
- Engineering Class
  - Univercity
- Expand Family STEAM/Maker Nights
Training the Trainers...

➔ Jackie Klar – STEAM Coordinator/MS Teacher
➔ Scott Anderson – HS Mathematics
➔ Nancy Samplawski – HS Science
➔ Amanda Prigge – MS Math/Science
➔ James Pickett – HS Business
➔ Theresa Wyss – K-12 Art
➔ Jenna Beitz – Agriculture
➔ Lucy Stuckey – 5th grade
➔ Penny Ramos – 4th grade
➔ Mary Larson – Elementary Principal/ Awesome Grant Writer!
➔ Traci Davis – MS/HS Principal/Superintendent
OTHER Points of Importance

➔ Dairy Team Avances to Worlds
  ♦ Will travel to Scotland
  ♦ Through 4-H but we are really proud of them and our Ag Department

➔ Musical
  ♦ Electronic Keyboard
    • Engineering and shop classes are building
  ♦ “...Need some rocket parts...”
    • Happen to walk by, be the person, have the materials

➔ ART
  ♦ Placing in regional Contests

➔ Pencil Box Engineering Has Been Implemented
OTHER Important Grants

- 2018 Energy Innovation Award
  - Thru PSC
  - $227,363
- Solar For Good Grant
  - $2704
- Meemic Foundation Grants
- Rocket Club Sponsorship continues
- DonorsChoose
- Wal-Mart
- Private Partners
Publicity

- Local Newspapers
  - Copy of Press Release Available
- Elementary Newsletters
  - Weekly
- Panther Newsletter
  - Monthly
- Radio Station
  - Panther Minute
- Television
  - Crystal Apple Winner
- Shirts
WE LOVE TO SHARE OUR EXPERIENCES!

➔ Traci Davis davis@judaschool.com
➔ Mary Larson larson@judaschool.com
➔ Jackie Klar jk@judaschool.com
➔ Amanda Prigge prigge@judaschool.com
➔ Scott Anderson sa@judaschool.com
STEAM IN ACTION
Encore
STEAM IN ACTION – Pleasant Spaces
STEAM IN ACTION – Pleasant Spaces
STEAM IN ACTION – Inspiring Labs

Computer Labs

Paintings by Community Member:
Cynthia Gempeler
STEAM IN ACTION – Inspiring Labs

➔ STEAM Lab
  ◆ Engineering
  ◆ Telepresence
STEAM IN ACTION – The DEN

➔ Design
➔ Engineer
➔ Network
STEAM IN ACTION – Learning Commons

➔ Old Gym Restored
  ◆ Comfortable
  ◆ Flexible
  ◆ Inviting
➔ Usable
STEAM IN ACTION – Literature

➔ Books that enhance a child’s STEAM and Growth Mindset thought process
STEAM IN ACTION - Middle School

- New Math Curriculum
- Project Based Learning
- Letter to Grandma
- Index Card Towers
- Learning Centers
STEAM IN ACTION – Projects

➔ Free/almost free resources
  ✦ Waterfall – How did they do that?
  ✦ Index card
➔ Nail balance
➔ Communication Activity
Creating a STEAM question out of packages that arrive at random!
STEAM IN ACTION - Drones

- Three Donated
  - One to agriculture
  - One to STEAM
  - One for check-out
STEAM IN ACTION - Coding

➔ 4k – 2
  ♦ Coding Mouse
➔ 4K–?
  ♦ Ozobot
➔ Code.org
  ♦ 4K–12
  ♦ Classes in Middle and High School
STEAM IN ACTION - Elementary STEAM

➔ Portable to classroom
  ◆ Hand2Mind
  ◆ Coding
  ◆ Rokenbok
➔ Eventually incorporated
STEAM IN ACTION – Future

➔ Take home backpacks
➔ Family STEAM Night will continue
➔ Collaboration with Code.org and local venue
➔ More Dual Credit Classes
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➔ Jackie Klar  jk@judaschool.com
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