

An Interdisciplinary Approach in Service Learning and Community Partnership Through STEAM

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An Interdisciplinary Approach in Service Learning and Community Partnership Through STEAM

This workshop will present strategies to equip preservice teachers in planning, implementing and evaluating curriculum using an interdisciplinary approach in service learning and community partnership. Partnering with the University's librarian and Maker Space; preservice teachers learned information literacy skills and integrate technology to create/fabricate prototypes for their lessons on STEAM (science, technology, engineering, arts, and math) initiatives. Implementations of lessons are carried out in the local Boys and Girls Club. With the new knowledge gained, the K-3 children from Boys and Girls Club are invited to the University's Maker Space to witness the actual implementation.

Agenda

1. Pre-quiz of participants' knowledge of interdisciplinary approach in service learning and community partnership
2. Panel Presentation of Project's TimeLine and Implementation (Summer – Fall 2019)
3. Small group discussions with guided questions on using interdisciplinary approach for service learning and community partnership
4. Group leaders shared ideas of discussion and reflections
5. Post-quiz of participants' knowledge of interdisciplinary approach in service learning and community partnership

Kahoot (Pre Quiz)

1. What is interdisciplinary approach in service learning?
2. What is information literacy?
3. What is a maker space?
4. Plagiarism is...
5. How long does it take to compile an e-portfolio?

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Panel Presentation

Timeline	Implementation
Summer 2019	• Course redesign to incorporate the interdisciplinary approach (Early childhood preservice teachers; information literacy and technology in Maker's Space) • Seek community partnership: Boys and Girls Club for service learning • Apply for IRB to study impact of preservice teachers' information literacy skills as a result of instructional intervention
Fall 2019	• Pretest of preservice teacher's information literacy knowledge beginning of semester • Preservice teachers gained knowledge in planning, implementing and evaluating curriculum using an interdisciplinary approach • Signed up for training at Maker Space to build prototypes for their lessons on STEAM (science, technology, engineering, arts, and math) standards • Visit Boys and Girls Club to implement lessons planned • Children from Boys and Girls Club invited to Maker Space • Posttest of preservice teacher's information literacy knowledge end of semester • Preservice teachers create an eportfolio on connections of experiences and interdisciplinary knowledge and impact of their service learning as a preservice teachers

Makerspace



Makerspace



Makerspace



Information Literacy focus

- **What is information literacy?**
- **Why focus on information literacy?**
- **Implementation**
 - **Lecture**
 - **Information Literacy Assessment & Advocacy Project (<http://ilaap.ca/>)**
 - **Pre- and Post-test**
 - **Same 20 multiple choice questions**
 - **Same 4 open ended questions**

Results (Quantitative Analysis)

Results of the 20 multiple choice questions on Pre and Post test

Questions	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Pretest:	0.59	0.29	0.65	0.18	0.82	0.18	0.71	0.88	0.47	0.29	0.41	0.76	0.71	0.88	0.53	0.88	0.65	1.00	0.06	0.24
Posttest	0.76	0.65	0.76	0.24	0.82	0.35	0.76	1.00	0.59	0.53	0.47	0.88	1.00	1.00	0.94	0.88	0.88	0.94	0.35	0.59

Results (Quantitative Analysis)

- **N= 17**
- **Statistically significant gains (pre- to post-) in 5 of 20 questions:**
 - **Locating physical materials in the library**
 - **What is “peer review”?**
 - **Best sources for different types of writing (expository vs. persuasive)**
 - **What is plagiarism?**
 - **APA citations**

Results (Qualitative Analysis)

N=18/19 responded

A) Knowledge of Information literacy

Before the course	After the course
I had little to no knowledge of information literacy at MTSU Walker Library prior to the training on September 3 rd by Dr. Karen Reed.	After the Information Literacy training on September 3 rd by Karen Reed I have more knowledge. I learned how to find relevant and reliable sources using the MTSU Library database. I learned how to incorporate literature in my lesson plans along with finding curriculum in the library. This training gave me many resources for lesson planning and working with children. This was a very informative training session and I have used aspects of it for my other classes.

Results (Qualitative Analysis)

N=18/19 responded

A) Knowledge of Information literacy

Before the course	After the course
Prior to the information literacy at MTSU Walker Library, I had some knowledge because I believe I have taken it before with one of my English classes. I think that it's always important to brush up on literacy and grammar because it's something that you will use for the rest of your life. It was nice to be able to get all of this information and gain new connections with people at MTSU. Knowing the resources that the MTSU Library provides is a game changer for students.	After the information literacy training, I now know how to properly cite articles, what a scholarly and peer reviewed article is, and where things are located in the library. I will apply this in my future because I now know what books are located on which floor of the library. I know what a scholarly article looks like and this is useful for any future paper that I need to do. Also, knowing how to cite things properly is a something that I will always need to know no matter what profession and how old I am.

Results (Qualitative Analysis)

B) Knowledge of Maker Space at MTSU Walker Library

Before the course	After the course
My knowledge was 0. I didn't even know we had such machines on campus.	I now know there are many different forms of technology and that they can be used to teach students and develop hands on methods as well. I will apply this in the future by using the machines if my school has them and showing my students that they can be part of creating items, and they to one day could create machines like that

Results

(Qualitative Analysis)

B) Knowledge of Maker Space at MTSU Walker Library

Before the course	After the course
My knowledge of the Maker Space at the MTSU Walker Library prior to the training was very minimal. I knew of it since I had seen it on the second floor of the library before, but before the training I had never actually gone into the Maker Space before. I knew it was filled of all different sorts of technology, but didn't know what they were and their functions. Overall, going into the training I hardly knew much at all.	Now, after attending the Maker Space training I was pleasantly surprised to see all of the different types of equipment that they had to offer for MTSU students. It was interesting to see all that they had there. For instance, the 3D filament printer, laser etcher, vinyl cutter, 3D resin printer, and more. I liked seeing how different they all were from each other and ways you can be creative with each one. When I did the 3D filament printer training, I learned a lot more than expected. When printing different models, the larger the object is the longer it will take to complete. Most will take hours to print out due to size and complexity. When making a model on the 3D printer, you have to be precise with every action you input into the computer. It was a lot more complex than expected. I can apply the information I learned from the Maker Space in my future classroom. I can encourage the use of technology since that generation of students will be growing in an even more advanced world of technology. Implementing what I can make from technology into a lesson can encourage my future students to want to do that and learn from me.

Results (Qualitative Analysis)

C) Integration of knowledge from Information Literacy; Maker Space; Classroom instruction and Boys and Girls Club Experience

Through my findings in information literacy, I was able to learn how children learn best when incorporating certain subjects in learning. STEM is a very popular and growing field that has now expanded into curriculums in early childhood education. It was good knowing in what ways was effective to teach younger children the skills and knowledge of STEM. Through Maker space, I was able to bring a creation of my own from Maker Space my students. I was able to include technology in the lesson and how things can be created from it. It was also great that they were able to come to Maker Space to actually see the machine I used and how it works. Through classroom instruction, it enhanced my learning of how to teach effectively. Prior to the visit at the Boys and Girls, I was able to learn more ways to instruct children. This included better ways of saying things, preparation for alternatives, understanding a child's view of learning, what affects their learning, and much more. When it was time to teach the lesson, I able to do these things effectively and how the knowledge of these things help children learn

Results (Qualitative Analysis)

C) Integration of knowledge from Information Literacy; Maker Space; Classroom instruction and Boys and Girls Club Experience

I integrated all of this knowledge by breaking down each aspect and truly applying it into my lesson. With information literacy, I could understand how to find resources for my lesson and easily find a way to find materials to form my lesson into what it became. Maker Space helped me create a prop and visual for the lesson that I had to teach. Children are very hands on and visual so that truly gave me a boost during the lesson. The Classroom Instruction information that we received in class helped me form my lesson because it taught me how to integrate different learning strategies into a classroom. It diversifies my teaching so that every child has an equal opportunity to learn and understand lessons that I teach. The Boys and Girls Club experience helped me because I was paired with three rowdy boys. It helped get a sense of how to handle situations like that and gave me the experience to become more confident with my classroom management.

Results (Qualitative Analysis)

D) Bridging Classroom Knowledge to Community

Working with the children in the Boys and Girls club aided to what I have learned in the MTSU community thus far. I have only experienced working with school children in a school setting or a daycare, this gave me an experience with an afterschool club program. I also had the opportunity to work with a small group in comparison to a whole class, which was a new experience for me. This was a valuable experience that I have not had before. This gave me an outlook on interactions with students outside of a traditional school setting with a class. This was a beneficial experience; it was something I needed to experience to strengthen my teaching strategies.

Results (Qualitative Analysis)

D) Bridging Classroom Knowledge to Community

Working with the children from the Boys and Girls club was a great way to get us engaged in the community. We made our lesson, created pieces from the Makerspace, used materials from the Curriculum Collection, and taught it. We also learned that is completely and 100% okay to modify the lesson as needed to better suit the students. That is definitely something that we had to do that day because our students did seem at all interested in what we were trying to teach them. We modified our lesson and changed our plans on the spot. In the end, it all turned out better than we expected. MTSU taught us to be flexible with our lessons and that what matters is the student. If we had followed the lesson plan the way we had planned it, those students wouldn't have learned much from us. Thanks to what MTSU has taught us, we were able to improvise and tailor our lesson to benefit them.

Small Group Discussion (10 minutes)

- 1. Who are some community partners/ resources you could work with in 2020?**
- 2. Provide strategies and timeline**
- 3. What are some benefits/ challenges of the collaboration**

Kahoot (Post Quiz)

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THANK YOU



- For further queries, please contact jane.lim@mtsu.edu