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THE HARTFORD HUB'S CREATIVE PARK:

A Reflection on EPICS and the Importance of Community

Nasser Alsinan (*First-Year Engineering*)

STUDENT AUTHOR BIO SKETCH

Nasser Alsinan is a freshman in First-Year Engineering at Purdue University. An international student from Saudi Arabia, he's hoping to pursue a Mechanical Engineering degree while studying at Purdue. In addition, as an active member of the Purdue Arab Society and the Student English Association, he's involved with on-campus opportunities and clubs. During his first semester, he joined the Engineering Projects in Community Service (EPICS) learning community with the Neighborhood Sustainability (NS) team. In this project, the team aspires to build a Creative Park next to the Hartford Hub, a neighborhood community center that serves the people of the Lincoln Neighborhood in Lafayette. In this reflective essay, he discusses the impact of this EPICS project on both the community and on himself, as the NS team seeks to establish both a staple for the Hartford Hub and a birthplace for the children's memories through the creation of the Creative Park.

INTRODUCTION

The Hartford Hub represents a second home to many of the Lincoln Neighborhood's children. The neighborhood community center, built by Faith Ministries in Lafayette, provides opportunities for children to get closer as a community, attend after-school tutoring, and participate in Bible studies. Within the Lincoln Neighborhood where the Hartford Hub is located, approximately 43.6% of households are living under the poverty level (Chianelli, 2019). According to the United States Census Bureau (2016), this means that 43.6% of Lincoln Neighborhood's households have an income that is below the poverty level threshold determined by the Census Bureau for each individual family based on factors such as family size, composition, and income. As such, the Hub is considered a jewel of the local community, helping in positively impacting its visiting children due to its numerous services while increasing neighborhood cohesion. Yet still, the Hartford Hub wishes to do and give more to the people of the Lincoln Neighborhood.

Right next to the Hartford Hub sits an empty lot that was purchased by Faith Community Development Corporation (2017), which is the company that sponsored the development of the Hartford Hub, from the City of Lafayette (Figure 1). The mission of the Hartford Hub is to create greater connections and cohesion between the people of the Lincoln Neighborhood, and as such, the Hartford Hub wished to use this vacant lot to build something that helps them in further achieving their mission. The project was requested to encourage active play, problem solving, and development of children's imagination, as well as having low maintenance and a low cost of operation. With the help of Purdue students, the Creative Park project was thus started by members of the Engineering Projects in Community Service (EPICS) learning community.

EPICS seeks to connect Purdue students with various organizations to tackle real-world problems through effective collaboration, and I joined it because of the great opportunities it gives students to impact communities positively. Within the EPICS learning community,

Figure 1. The empty lot next to the Hartford Hub. Photo courtesy of Nasser Alsinan.

there is a plethora of teams all working on student-driven projects that carry the same goal of making the community a better place, and the Neighborhood Sustainability (NS) team aims to do so through developing the Creative Park. Different from a conventional park with traditional swings and jungle bars, the Creative Park hopes to attract children to play with new games and puzzles that focus on active and creative aspects of play. Developed by various members of the NS team, the puzzles fall into categories that emphasize motor, expressive, and competitive skills, ensuring that the children both enjoy their time together and reinforce these skills while playing in the park. Furthermore, the park also aims to bring the neighborhood closer together.

With a primary objective of increasing neighborhood cohesion within the Lincoln Neighborhood through the creation of a park that engages children in areas such as critical thinking, problem solving, and creativity, the NS team is tackling an ambitious project, but one that will certainly aid in the positive development of the children of the Hub and the Lincoln Neighborhood. Through teamwork and collaboration, the NS team is attempting to create a staple for the Lincoln Neighborhood in the form of the Creative Park.

DESCRIPTION

Our community partner, the Hartford Hub, strives to build relationships by serving the children and families of the Lincoln Neighborhood. Before building the Hartford Hub, Faith Church contacted members of the Lincoln Neighborhood community to create services that they believed could help make the community a better place while strengthening the bonds of the people within the neighborhood. Built in 2016 by Faith Ministries and

located in the southern part of the Lincoln Neighborhood in western Lafayette, its mission statement accurately describes its purpose as “to seek to glorify God by providing a safe space for the Lincoln Neighborhood residents to build relationships and enrich lives” (Faith Community Centers, 2017). Since its construction, the Hartford Hub has flourished into an important gathering place for the children of the neighborhood. The Creative Park project is going to extend the work of other students who have managed to further unify the Lincoln Neighborhood along with the Hub, such as student Nathan Chianelli, who volunteered at the Hartford Hub creating activities such as pumpkin carving for the whole community, while also collecting data on the demographics of the Hartford Hub that we aspire to continue serving.

In addition to coming from low-income families, with some under the poverty level threshold set by the United States Census Bureau, the children who frequent the Hartford Hub are predominantly African American, with many of them belonging to single-parent households (Chianelli, 2019). Within the Lincoln Neighborhood, as much as 77% of family households are accounted for by single mothers, and the Hub provides a safe place for the children to gather in an area with high drug use, with the Lafayette Police Department reporting 597 drug abuse incidents between April 26, 2017 and April 26, 2019 (Chianelli, 2019). Our aim is to enrich the lives of these children in addition to what the Hartford Hub has been doing by creating a park for the Lincoln Neighborhood’s children that can increase neighborhood cohesion.

To give an overview of the Creative Park project as a whole, it’s composed of five functional groups determined through brainstorming and collaboration, and they include a common space for the children to play, a green space to increase their connection with nature, a treehouse as part of the park, outdoor climbing structures, and the puzzles of the park. Together, these five functional groups form the basis of the Creative Park as they interlink to create its design. To further distinguish the Creative Park from a conventional one, our team has created “puzzles” over the last couple of semesters. These puzzles are games that the team has developed to invoke both activity and creativity within the children, allowing them to have fun together while appealing to their cooperative, creative, and constructive capacities. The Creative Park is divided into two buildings with puzzles built into them and a ramp, as well as a space for a climbing wall, climbing bars, and outdoor puzzles, and as such, each area will have different categories of play to tackle. Furthermore, the park seeks to bring the children together in a common play area, thus aiding in

creating a closer community, but this play area has to address certain needs in order to be successful.

Working with the Hartford Hub, our team has to keep the community partners' and clients' needs in mind when building and designing the park. The park has to be low maintenance, and as such, the materials we will use in constructing the park have to be strong enough to endure Lafayette's climate. Furthermore, the safety of the children is a must, and ensuring safety is accomplished by creating a park design that doesn't allow for hiding spaces and puzzles that don't pose any risks to the children. The park also has to comply with the Americans with Disabilities Act (ADA) guidelines issued by the United States Access Board (2014), and these include the requirements, among others, that >50% of the park's play components be accessible from the ground or be connected by a ramp and climbing walls be built at a certain angle. In addition to keeping all these needs in mind, the NS team has also used feedback from our clients, the children of the Hartford Hub, throughout the progress of the project.

In coming up with ideas for the Creative Park, we met with the children of the Hub to get their input on our puzzles. We began by brainstorming puzzle ideas for the park, and then settled on four current main ones: a music wall, a tic-tac-toe game, a maze wheel, and a magnetic table. After building and prototyping them, we visited

the Hub and asked the children what they thought of the games. Their feedback proved valuable, as they pointed out points of weakness for each puzzle. For example, for the maze wheel puzzle, they thought that the maze was too easy and recommended increasing its difficulty. As for the other puzzles, they advised changing their lengths as well as adding instructions. Getting feedback straight from the children of the Hub has allowed us to use it to improve our designs significantly in order to meet their wishes, and we will use that feedback when we proceed to build the puzzles along with the Creative Park.

Divided into two distinct structures, the Creative Park is going to be built in two phases over the next upcoming semesters in the empty lot next to the Hartford Hub (Figure 2). Sized at approximately 50 ft by 83 ft, sitting in between the community garden and a Faith-owned house, the lot holds enough space to build our Creative Park with the help of a grant from German automotive company ZF. In addition to giving us a grant, ZF has also volunteered a number of their employees to help us in physically building this unique project, giving us a big push toward achieving the final Creative Park build.

COMMUNITY IMPACT

Our ultimate success for the Creative Park project will come when we deliver it to the Hartford Hub. The

Figure 2. A 3D rendering of the park's design.

Creative Park as a project has been in development since 2017 and is currently in the delivery phase. However, due to the COVID-19 epidemic, the delivery of the project will most likely be postponed to either the fall 2020 or the spring 2021 semester. Once the project is built successfully, the Creative Park project as a whole will be deemed a success, but we've also evaluated our successes along the way as well. For example, to get a grant from ZF, team members had to visit the company and give a presentation to receive funding, and acquiring it meant that the team had succeeded. Our main goal has consisted of many smaller goals that we had to achieve in order to begin building the Creative Park, and we hope building it achieves the greater goal of further uniting the Lincoln Neighborhood. The result that we aspire to attain once the entirety of the Creative Park is built is the main reason the NS team started the project: to bring the community closer together while giving children a chance to have fun and develop. Serving as a place for fun childhood memories to be born, the Creative Park can truly become an important part of the Lincoln Neighborhood if its mission is accomplished. Moreover, the beauty of this project is that it does not need consistent maintenance and supervision. Once the park is built, and the EPICS NS team that built it has graduated from the university, the project will still remain. It's still going to be standing years after it's built, and the longevity of the Creative Park means that it may very well be here for generations to come and enjoy, but this project would not even be possible without our amazing community partners.

Having the Hartford Hub as our community partner has helped us immensely in working through this project smoothly (Figure 3). Since the start, their requirements and objectives for the project were made clear, and whenever we've had any questions, they've gladly answered. They're more than adequately prepared to work with students in order to create exciting projects, and their cooperation with us is a true testament to their belief in our project. In addition, the Hartford Hub is also a community partner to another NS project that's currently being worked on as well, which is an exhibit that seeks to teach children about the field of advanced manufacturing as a potential career path, and the people at the Hartford Hub manage to give quick feedback to both NS projects when needed. Two times per semester, EPICS hosts a Design Review to which various reviewers are invited in order to evaluate the progress of each EPICS team within their respective project, and the representative from the Hartford Hub, Lori Walters, has come to each Design Review and provided invaluable feedback about aspects such as puzzle design. Every

Figure 3. The front of the Hartford Hub. Photo courtesy of Nasser Alsinan.

step of the way, the people of the Hartford Hub have consistently shown their commitment to their mission statement.

Overall, the Hartford Hub simply seeks to help the children in their growth and to unify the community, and that's why they represent the perfect community partners for the Creative Park project. The people at the Hub truly care about the children of the Lincoln Neighborhood, providing one-on-one tutoring to aid them with their schoolwork as well as having them participate in preparing food to give to those in the poorer areas of the community. Owned by Faith Ministries, the Hub acts on principles of Christianity such as loving one another and helping our neighbors to unify the community and strengthen their bonds, creating a place where the people proudly and selflessly serving within it can be called the children's second family. The Hartford Hub is partnering with the NS team for their projects because they wish to do more for the children, whether it's through teaching them about career paths or creating a common play area, and their engagement in giving feedback and allowing us to visit the Hub on numerous occasions has shown us their care and love for the Lincoln Neighborhood. Partnering with the Hartford Hub has been a valuable experience, and the only barriers that we have had to overcome involve meeting our clients' needs. The challenges that we have faced with our clients, which in this case would be the children who visit the Hartford Hub and the children of the Lincoln Neighborhood as a whole, have mainly been with our puzzles and their designs. When designing puzzles, we have to evaluate if they're actually fun, if they're tackling aspects of play we want them to tackle, and if they might present a potential risk to the children playing. Through collaboration within the team, as well as constructive criticism

from the Hartford Hub and its children, we have evaluated our puzzles accordingly.

The Creative Park has puzzles that incorporate the children's wishes to express their creativity, compete against one another, and solve challenging games. Four main puzzles are currently being developed, and they include a music wall, a tic-tac-toe puzzle, a maze wheel, and a magnetic table. The music wall allows children to be creative, creating their own pieces of musical art by hitting pads attached to PVC pipes, with each pipe producing a different musical note depending on its length. The original plan for the music wall was to use a pad attached to a cord, but through feedback from the team, we have evaluated that there would be a risk of attaching a long cord since there is a possibility that children might use the paddle and cord as a weapon if a fight were to start. The tic-tac-toe structure tackles the children's competitive and strategic aspects, as each child will have to develop their own techniques to increase their chances of winning. Prior to feedback from Design Review and the children of the Hub, the tic-tac-toe puzzle was previously both Connect 4 and tic-tac-toe, but questions about creating instructions for the game prompted the NS team to create a more coherent puzzle by only choosing one game to be played using colored rotating cubes lined up across aluminum rods (Figure 4). The maze wheel consists of a 3D printed maze with a marble inside and is attached to a wheel that the children can rotate to navigate the marble into the middle of the wheel, thus "beating" the maze. Feedback from the children showed that the maze design was too simple and easy for some, and numerous more difficult maze designs have since been created. Finally, for the last puzzle, the magnetic table has various toys within it that the children move using magnets attached to a very short cord fixed to the table, moving them through tunnels and obstacles as they race against friends, again appealing to the children's competitive attitudes. After receiving feedback about the attachability of the magnets to the cords from various members of the NS team, this puzzle has utilized 3D printed objects to fix the magnets and ensure that the children do not detach them. As can be seen, within each puzzle, we had room for improvement and design challenges that we had to address to meet our clients' needs and create the best possible versions of our puzzles that we could make. Using feedback, we addressed challenges that prevented our puzzles from reaching their best form through fruitful collaboration.

By adding park components that engage the children to play outside and to enjoy their time together, the Creative Park advances toward its main goal of building

Figure 4. A prototype of the tic-tac-toe puzzle.

stronger neighborhood cohesion. The Creative Park achieves two objectives by adding unorthodox puzzles: it attracts children to the park to play together, thus adding to their sense of community, and allows them to improve upon their various capabilities. Our hope is that it becomes a park that the children of the Lincoln Neighborhood will deem as their own, a birthplace for memories among friends and families. We want them to play together, to engage with the Creative Park, and to celebrate the beauty of childhood with lasting memories of enjoyment and happiness with those whom they love.

STUDENT IMPACT

I believe that throughout my experience in EPICS, I have learned essential skills and lessons. Actively working within my team gave me value and experience that made the last two semesters an enjoyable educational experience. As a result of joining EPICS, I believe that I have had the chance to become a better student. I've had to learn how to use software to create 3D sketches, consistently write reflections on the progress of our project, and meticulously plan every design choice before making it. This experience has translated well into other aspects of my academics, as I have used my knowledge of 3D sketching software in other engineering courses, learned how to reflect in order to improve whenever I've done badly on an exam or an assignment, and thought out numerous steps ahead before taking them in group projects. EPICS has been a wonderful experience, but it took me a while to adapt at the start.

Prior to coming to Purdue, I signed up to the EPICS learning community with the thought that it would simply be another engineering course, and I wasn't prepared for what would come at first. EPICS is a *real-world* project, with actual project partners that require students to solve their problems. It closely simulates work environments and the logistics of an actual engineering project. Before EPICS, I didn't have any experience with engineering projects, and as such, I was nervous when we

first began. I wasn't sure what to expect, and there was a learning curve for me to overcome. For example, I was expected to create a 3D sketch of my puzzle early on, but I had no idea how to create one or what software to use. Thankfully, my team helped me through the process of designing the sketch, showing me the right software to use and giving me a basic overview of how to sketch. Even though I didn't have the engineering experience, I had an amazing team that helped me every step along the way as well as a work ethic that pushed me to pursue the things that I needed to learn. Moreover, in addition to the technicalities I learned in EPICS, perhaps one of the greatest lessons I've come to realize is the social impact of EPICS community projects.

Engaging in an exciting engineering project that serves the Hartford Hub, as well as the people of the Lincoln Neighborhood, has shown me the impact of serving the community. It's important as an engineer, I've learned, to use my expertise to help other people. Building projects that actually leave an impact, and that aid in creating cohesion, is at the top of my priorities as an engineering student. Visiting the Hub multiple times, and meeting all the young children excited for the Creative Park, has given me purpose throughout my time at university; using my education to better the community and to help other people is why I want to be an engineer. EPICS has given me that value and objective, but it has given me plenty in terms of soft and interpersonal skills as well.

Within EPICS, we're initially taught the steps of the design process. These steps help in guiding us through our overall project, and in determining the smaller micro-goals that make up the main and bigger macro-goal. These steps are essential to any team's success, and they include the logistics that one must follow in an engineering project such as specification development, detailed design, prototyping, and gathering user feedback, up to the last steps of retiring the project once it's completed (Engineering Projects in Community Service, 2010). As previously mentioned, since I had never participated in an engineering project prior to EPICS, having a framework to return to when I encountered problems helped me in effectively finding solutions. The design process phases have been important for our success, and learning them through practical application in completing my task of creating a puzzle, which developed into the tic-tac-toe game, has given me valuable experience. However, none of the progress that I have made would have been possible without productive communication and collaboration.

Simulating a real engineering project similar to those in workplace environments, I have also learned the skill of effective communication and collaborative teamwork. As English is my second language, it can sometimes be difficult for me to express my ideas clearly in a descriptive manner, but through sheer practice and application, I have become more comfortable with speaking the language, and thus in delivering my ideas effectively. In addition, joining such a hardworking team, I've attained the ability to work closely as a team member. Feedback has been one of the main pillars that has moved this project forward, whether it be feedback on the design of the actual park or its components such as the puzzles. Being able to give a valuable addition to the team made the difference for me, as I felt that my ideas and opinions were of value to the other members, and theirs were of value to me as well. Collaboration has allowed us to flourish, and hopefully no further than the spring 2021 semester, the results of our collaboration will come to fruition with the building of the Creative Park. Moreover, additionally simulating the workplace, each EPICS team has to choose their budget for their project, giving me more experience as to what materials to use to meet the community partner's needs and to compromise to create a reasonable budget, all of which I consider important soft skills to attain. Learning the soft skills required of engineering projects was an important learning experience, but perhaps the greatest value that I gained from EPICS has been the personal relationships and friendships that I have enjoyed with my team. As an international freshman, I felt homesick when I first began my educational journey in the United States. I missed my home and my family; laughter always filled Aunt Nesreen's quaint living room among the wonderful aromas of white rice and grilled fish. Connecting with other people from all over the world while still feeling the effects of homesickness proved to be difficult, and I established no real relationship with anyone in my classes beyond simple conversations about the class's materials. Whenever I would try to befriend people, it would be at a shallow level, and I was unable to make a real connection with anyone outside of my Saudi friends. Thankfully, within the NS Creative Park team, what I found was more than simply another group project. We would work on our project while simultaneously telling jokes and laughing at the stupidest (and funniest, might I add) of jokes. I found myself comfortable around them, able to simply be myself and to enjoy our meetings. In fact, I looked forward to going to our weekly lab sessions because of how much I enjoyed being with my team, creating friendships that I have come to deeply appreciate. To Josh, Jason, Brooke, Gabby, Kyra, and Dylan, thank you

Figure 5. A group picture at Silver Dipper taken by Nasser circa spring 2020.

for making a great team, great friends, and a great experience building my own puzzle (Figure 5).

Within the Creative Park project, I was a member of the puzzles subteam, which meant that I had to create a puzzle from scratch so we could add it to the park. Generally, the main barriers that I had to overcome involved creating a puzzle that the children would enjoy, develop their skills through playing, and not get hurt playing, resulting in my challenges being mainly design and build based.

The puzzle I'm creating, as I've mentioned previously, was going to incorporate both tic-tac-toe and Connect 4 before solely becoming tic-tac-toe, but that was just one design decision that I had to make throughout the year. Design challenges that I faced had me changing dimensions in order to fit and not exceed the budget, as well as changing the arrangement of the cubes so as to allow multiple tic-tac-toe games to be played at the same time without overcrowding the play area. My puzzle presents little risk for the children who choose to play it, but thinking through its mild risks through a risk analysis, I found that the rods needed solar reflective paint for when they heat up due to the sun, and have since added that to next year's budget. Overall, our team faced challenges mainly relating to designs and decisions that meet the client's needs, and I had to think through these challenges to ensure my puzzle is in a good state before proceeding to building it.

I am very happy with my journey through EPICS, and even though I came in with literally no experience, I wouldn't change a thing about how I approached it. Learning throughout the semester was fun and exciting,

and I looked forward to meeting with my team every week. Inspired by the work we've been doing this semester, and the visits we have made to the Hartford Hub, I plan to continue working with the good people of the Hub if possible. There might be future EPICS projects that the Hub will ask our team to begin, but even if there aren't, I want to visit the Hub and perhaps help in tutoring or organizing games and activities for the children. This experience has shown me the social impact that projects such as ours can have, and it has definitely impacted my perspective on community service. I want to take on more volunteer opportunities, and I hope to simply be able to do more good if I can at the Hartford Hub.

Engaging with the Creative Park team and the Hartford Hub, I feel passion for our project. I want to fulfill the goals of the Creative Park, to aid in building it with my own two hands, and to watch the children happily play within it. Even with everything I have learned so far, I am sure that I still have much to learn both academically and personally, and my passion for the project will drive me forward to work with the NS team.

CONCLUSION

I've written this reflective article in hopes of showing the effect that EPICS has on communities and the people working on its projects, and if there is any piece of advice I can give to new students joining the learning community, it is to try to enjoy the process of learning while forming close ties with your team. EPICS has given me the opportunity to work on the Creative Park with the NS team in partnership with the Hartford Hub, learning much throughout the process about community, work ethic, and friendship. Serving the community through the application of engineering principles and the spirit of collaboration has consequently become a main objective for me throughout my university career, as I have developed a passion for EPICS and community projects. In the process, I've witnessed the unifying effects of community and the good it brings to the cohesion of neighborhoods, creating long-lasting relationships and friendships. The Creative Park attempts to add to the cohesion of the Lincoln Neighborhood, creating a place for memories to be born. Attaining soft skills such as communication and teamwork have been important facets of my EPICS experience, but EPICS has left a greater personal impact on me through the relationships and friendships that I have built within the NS team itself. Serving through engineering and helping communities further achieve unity are precisely the reasons that make EPICS truly monumental.

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