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Genius Hour and Makerspace for Students

Kholoud Aldehbashi

Abstract

This article explores how implementing Genius Hour and Makerspace improves critical thinking for students. A review of the literature found that Genius Hour is the time students spend in learning and inventing while Makerspace is the place where they do that. Genius Hour gives the students an opportunity to explore, learn, and be creative in their own way. The researcher found that there are several ways to implement Genius Hour. One method observed in school immersion that was very successful was to take students to the Makerspace at the library where they could choose what project they wanted to work on and start to learn how to program on their own. These students had the opportunity to search, try different coding blocks, and learn from their mistakes while they worked on building and programming electronic devices and robots. To improve critical thinking for students, the teacher will work with two classes each week implementing Genius Hour at the computer lab. Achievement data will be compared between the treatment group and the control group.

Genius Hour and Makerspace

It was the end of the week on a typical day at my high school. That day I was discussing the first project of the semester with my 10th grade students. The project was to create a short video using one of the graphic and video editing programs that they were learning for more than two weeks. After explaining the rubric to the students, I showed them a few examples from YouTube to give them some ideas for this project. Amal, one of the shiniest students in my class raised

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her hand to ask me a question. “What is the topic for this project?” Amal asked. I replied “Choose a topic that interests you and make a video about it.” I gave them some time to find a topic they were interested in working with and plan how to film this video. They were searching, discussing, and writing down some notes. I could see how excited they were talking about making their own videos. By the end of the class, they shared their topics with me. I noticed that most of them chose the same topics from the examples they watched earlier from YouTube. In my fourth period, I found that all my four classes were struggling to decide what topic they wanted to work with and they simply chose something they just watched. They also were asking me to give them an exact program name to use with this project. That made me wonder why my students did not have the imagination and the passion to choose a topic about something they like or had interest about. Why did they ask for a specific topic and exact directions on how to do this project although I gave them the freedom to choose? Such questions that require creative and critical thinking are essential aspects of the Saudi 2030 policy initiative.

The Saudi 2030 policy initiative began as an effort to reduce Saudi Arabia’s dependence on oil exports and to build a sustainable economy dependent on other strengths of the kingdom. It is also considering the evolution of Saudi society. Education plays a significant role in this policy initiative. It was the first sector to be announced for development of the Saudi 2030 vision. Schools are to be more focused on student’s talents, skills and facing challenges. Educators are to support students with 21st century skill development. Genius Hour will play an important role in the Saudi 2030 policy initiative.

Genius Hour and Makerspace can improve critical thinking for students. When students become critical thinkers, they will have the passion to explore, learn, and innovate projects. This process is an active, student-centered process which aligns with the Vision 2030 goals. My topic will impact the social, economic, and political situation in KSA as it provides students with the freedom to explore which allows them to learn from their mistakes and become self-directed learners. Giving the students the choice to decide what to learn and how to learn will take them to a higher level of thinking and innovating. This will increase their abilities and confidence to make decisions of all aspects in the future and will prepare them to be leaders. Social, economic and political situations will be driven by a creator generation. Specifically related to gender equity, my topic will confirm equity because it gives the same opportunity to all students regardless of their gender. Both boys and girls can explore all fields and take responsibilities for their work thus initiating greater gender equity in schools. It will teach them from a young age that their rights and opportunities do not depend on their gender.

When students have their own self-driven search for knowledge, they will come up with innovative ideas and projects and they will be more self-motivated. Matteson (2016) states, “Carving out the time for Genius Hour can be a big chal-

lenge in a world where educators are accountable for every minute of instructional time. But the gains to be made in student engagement and critical thinking are well worth it” (p. 37). This strategy provides students with the freedom to explore so they learn from their mistakes and are more self-directed in their learning. According to Robinson (2018), “In a Genius Hour makerspace, students have the freedom to explore their own interests and create original projects. They direct their own learning, which allows teachers to facilitate and provide more student support” (p. 18). Genius Hour is so motivating that the students read more, to learn more. They become experts in their topic because they want to, not because the teacher told them to. “Students read a wide variety of informational texts to gain knowledge necessary to complete their maker projects. When they begin to tinker and invent, they face challenges that encourage critical thinking and problem solving” (Robinson, 2018, p. 19). Graves (2015) states, “Design challenges teach problem solving and creative thinking, and they are one of the easiest ways to create a community of makers.” This method turns students into active learners and decision makers. According to Robinson (2018), “Genius Hour is all about the journey, while the makerspace is another available tool the students can use to learn new things and experiment with ideas in a space that is supportive of taking risks and failing” (p. 18). Genius Hour is the time students spend in learning and inventing while makerspace is the place where they do that. Genius Hour Makerspace could be a fixed place or a mobile station. “Because academic libraries already nurture critical thinking and learning, they are a perfect environment for makerspace” (Julian & Parrott, 2017, p. 14). This concept could be customized according to the teacher possibilities and the students’ needs.

I had the chance to be in a school immersion for a while in the United States. In one of the computer sciences classes, the teacher took his students to the Makerspace at the library where they could choose what project they want to work on and start to learn how to program it on their own. The Makerspace at the library was a fixed place that contained a lot of electronic devices and robotic models. The students had the chance to choose one of these devices and models to work on. They had the opportunity to search, try different coding blocks, and learn from their mistakes while they were working on building and programming those devices and robots. This experience showed me how important it is to give students the chance to direct their own learning. It expanded students’ knowledge and raised their confidence to make decisions. I knew that teaching in the United States depends mostly on technology, but I did not know that it is self-directed learning especially with high school students. I did not hear the term Genius Hour and Makerspace until I arrived in the U.S. Having the chance to discover these and see them at school was a great opportunity for me. I believe that Genius Hour and Makerspace can play an important role at schools to prepare students for the future and support them to be creators and leaders. Implementing this new method back in Saudi Arabia will be a great development for schools’ outcome.

I will apply Genius Hour and Makerspace in my school at my computer lab classes. Students will have the chance to choose the project they want to work on and the way they want to learn how to do it. I will give them an hour weekly to work on their projects and supervise their progress with giving help when needed. I created a plan of action to implement Genius Hour with detailed steps. First, I will create an attitude survey to give to all students and a teacher survey to give to all teachers. Second, I will start collecting websites, and podcasts and resources about Genius Hour and Makerspace with links. Also, I will collect forms, images of ideas that can be used in my classroom to help me.

At the beginning of the semester, I will share my action research project with my principal for approval and request resources that are needed. Next, I will share my action research project with my supervisor so that she knows why I am teaching differently between classes. Then, I will share with the other teachers on my PLC team what I learned about Genius Hour and Makerspace. The next step will be selecting two of my classes to implement Genius Hour instruction (treatment groups) and two where I will not use Genius Hour (control group). I will present Genius Hour to the treatment groups and show them examples for Genius Hour at schools (YouTube videos). After that, I will assess student attitudes towards projects by giving them the pre-attitude survey. At the same time, I will give the teachers the pre-survey that I created for the teachers.

I am going to start my pre-observations for the two treatment groups while I am implementing Genius Hour in the classes. The next step will be sharing my action research project with one or two teachers and inviting them to visit my classroom while I am teaching the treatment group and implementing Genius Hour. After each month during the semester, I will do my post observation for the two treatment groups. Then, I will analyze the data between pre and post observation to answer the question “Did the Genius Hour that I used for the two classes work?” after each project so I can see what I need to change in my Genius Hour implementation process. Then I will assess student attitudes towards projects by giving them the post-attitude survey and also giving the teachers the post-survey for teachers. I will analyze the data between both pre and post students’ attitudes survey and teacher survey. By the end of the semester, I will organize and analyze all the data that I collect from surveys and observations to make the changes that I need in my plan of action and start working on the next semester implementation.

The first obstacle I can think of in implementing Genius Hour is the principal support. Even if I could get the approval for this new idea, I may not get the resources that I need. A second obstacle would be the supervisor approval because I cannot do any changes in the class time without her approval. Genius Hour Makerspace is a new strategy even in the U.S. Furthermore, I think my action research can benefit educators in both countries, Saudi Arabia and the U.S. I also noticed that schools in Saudi Arabia have more strict rules than in the U.S. I think some of these rules should be kept while others should be more flexible. For example,

mobile devices are prohibited at schools in Saudi Arabia and I believe this helps to keep students focused and not get distracted during classes. I also think that separating girls and boys at middle and high schools help students to get better achievement.

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