A Design for the Science of Basketball:

An Interactive Exhibit at Liberty Science Center

Advanced Using Integrated Software

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**Design**

My Museum Project is to design a Science of Basketball exhibit at the Liberty Science Center located in Jersey City, New Jersey. This design is grounded in Norman’s theories of Interactional and Experience design. Norman defines the quality and enjoyment of the total experience, what can be done, what is happening and what just occurred in Interaction Design (IXD) (p. 5) which examines the human-computer interaction. Allen and Gutwill (2004) describe the benefits of interactive features in Design of Science Museum Exhibits. They cite Mclean (1993) discussion of interactive exhibits - those in which visitors can conduct activities, gather evidence, and select options based on **i**nput and reaction. The final basis for this exhibit is Universal Design of Learning (UDL) Guidelines Principle II. - Provide Multiple Means of Action and Expression with and possibilities for expression and communication. In creating learning exhibits the accessibility of the physical environment should be considered. Supports should be available for persons with disabilities. This would require providing appropriate alternatives so disabled individuals can still learn within the exhibit. Clear communication is important for this exhibit to be successful. This is not only important for those who have special needs who may learn differently but those from other countries and cultures.

**Educational objectives relating to the mission of LSC**

The mission of Liberty Science Center (LSC) is to get learners of all ages excited about the power, promise, and pure fun of science and technology.

During our NJCU trip to LSC we noticed a variety of exhibits that exemplify this mission. Many of the exhibits center on health. The science of basketball fits with the mission of LSC in the areas of the science of physics, mathematics and the laws of motion. Whenever you dribble, shoot, or pass a basketball, all relate to these sciences.

With a basketball connected to a string, exhibitors can bounce the ball on a pressured surface to see the amount of force the ball hits the ground with to go back up as a learning mechanism. Learning about the science of basketball can hopefully lead to those of all ages getting more interested in physical activity. The Center for Disease Control (CDC) has indicated that obesity amongst school-aged children has become a significant issue in the United States with about 17% of these kids being obese (or about 12.7 million), and the science of sports.

**Exhibit features:**

When we think of museum exhibition design, we have to first think about how each of the attractions will co-exist with one another. The theme of this exhibit would be focused primarily on basketball and science. The exhibit would include activities and learning opportunities both interactive and lecture based. The history of basketball will be presented on an interactive hand-held Mobile museum guide..

NBA’s new Samsung VR headsets allow you to watch professional basketball games courtside. A demo would be shown where learners can put on the headsets and watch a minute video of what it’s like to be courtside. This would allow students to understand a bit more about how technology can connect individuals around the world.

Samsung VR headsets: <http://www.nba.com/vr>

An exhibit that will be interactive will include seeing how high the vertical leap of a learner is. LSC already has exhibits that tell you the height of an individual but not the amount of leap they have. Display screens will indicate how far someone has gotten off the ground.

Another exhibit will include a small path with footprints of famous basketball players to show the diversity of a human being. This will give the opportunity for learners to compare their own foot-sizes to see how they stack up.

A showing of a popular videos currently taking place on ESPN (Entertainment and Sports Programming Networks) called Sports Science that would show the science of basketball from some of the greatest basketball players in the world including Lonzo Ball, LeBron James and Stephen Curry. The video would only last for a little over five minutes to bring new learners in to watch the video.

Lonzo Ball: <https://www.youtube.com/watch?v=0CNxoTKvG20>

LeBron James: <https://www.youtube.com/watch?v=kExlzEaOCYU>

Stephen Curry: [http://www.espn.com/video/clip?id=143](http://www.espn.com/video/clip?id=14318870)18870

**Cost** would be an easier issue to tackle on this exhibit as the NBA could sponsor many of the attractions in the exhibit. The NBA Cares program [http://www.nba.com/nba\_cares/programs/](http://www.nba.com/nba_cares/programs/%20) , helps those in the community that would make the cost of many of these easier to manage in addition to potential sponsorship opportunities (i.e. donating the virtual reality headsets, donating the ESPN Sports Science videos).

This exhibit will incorporate the safety standards of Association of Science - Technology Centers (ASTC) standards. LSC currently has accessibility standards

and is an ADA-complaint museum

 **Case studies** show how students experience similar the exhibitions. A 2016 case study evaluated a Virtual Reality Weekend at the British Museum and found the VR environment helped the students understand the collections. Samsung Gear VR headsets were top rated. A second study, a meta analysis published on Effectiveness in Education in said students do learn better when immersed in virtual worlds LSC will close its IMAX for six months to create the world's largest planetarium. This Science of Sports exhibit will present a draw to visitors 5-19 during this period and provide an interactive engaging Virtual Reality experience.

**Visual Representation Details** The exhibit is set on the second floor of the exhibition hall, and has multiple elements that students 5-19 can enjoy and engage in. It will include: interactive history and science of basketball walls around the perimeter of the oval space, at the far end will be the Vertical leap test that will provide feedback on science data the child, performance, a Sports Science Theater where 3-D video experiences will occur, on the near side will be a Demo of NBA Game Courtside using VR Set, and around the oval Footprints of NBA greats for children to walk in and compare to their own, Pickup and drop off stations of Handheld Museum Guide and VR headsets outside at each end.

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