



Introduction

Abstract

The goal of this project was to create a form of outreach to high school students to increase awareness of the medical laboratory science (MLS) profession. Research has shown that the most effective lessons include hands on activities and technology (1). In order for this to be an effective outreach opportunity, the plans had to be engaging enough to spark interest in the career, and stick with students long enough to affect their career decisions down the road. Utilizing research and my experience as a medical laboratory scientist and former high school science teacher, ready to use lesson plans were created for high school teachers to introduce the medical laboratory science profession to their students. Each of the lessons have activities that simulate what an MLS would do in the clinical laboratory. In making these lessons hands-on so the students are engaged in the medical laboratory experience, it is hoped the activities will leave a lasting impression on students and that they will consider a career in medical laboratory science. The more that these activities are shared and utilized in high school classrooms, the more effective this project will be. In order to make these lesson plans more widely available, they will be shared for free on web sites such as sharemylesson.com, a popular website for teachers to find lesson plans.

Introduction

Although medical laboratory science is an important career within the world of healthcare, many people do not know exists. Patients view their test results and hear from their doctors what these results mean, but many do not know where those results come from, or what goes into obtaining them. Worldwide, medical laboratory science is under-represented, and there is a general confusion surrounding the title and job description (2). There is currently a shortage of these laboratory professionals, and the best way to solve this is to bring medical laboratory science out of the shadows, and let the world know about this exciting, rewarding, and crucial career. Because high students are our future workforce, this is a great target audience to bring awareness of this career option. This project provides materials and information for high school teachers to use to introduce their students to medical laboratory science, even if they do not have any previous knowledge of the profession. The lesson plans are engaging, require very little preparation time, and only include materials that are easy to obtain and affordable. These factors make this project a great opportunity to open a door between the future workforce and this little known profession.

Results

Methods:

These lesson plans were written by a licensed high school teacher based on next generation science standards, so that they meet all necessary criteria to be used in the classroom. The plans include activities that highlight why the career of medical laboratory science is important, as well as give them an idea of what goes on in a medical laboratory. These include how laboratory professionals determine a patient's blood type and match them with compatible donor blood, how they analyze urine, and what they can learn from a blood smear. The activities and lessons are mostly hands-on, and where virtual tools are used, it is done so in ways that are proven to be effective in keeping students engaged (1). The plans include a digital slideshow that can be shared with students, a materials list, and directions for each of the activities. The directions include alternative options for how to present, as well as more resources if teachers would like to expand on the topics. The plans themselves are available digitally, so can be easily shared to get as much use as possible, making this project effective outreach to high school teachers and students.



Image 1- Materials for the urinalysis and blood banking activities: Cornstarch, urine dip sticks, food coloring, eggs, cream, and vinegar.



Image 2- A QR code to the cell identification quiz used in the hematology activity.

Results:

The finished product of this project is a lesson plan that includes three activities. Each activity highlights the tasks completed in different departments in the medical laboratory including blood bank, urinalysis/chemistry, and hematology. Directions are included with each of these activities, as well as links and ideas for further enrichment on each topic. A material list is given, which only includes affordable, easy to obtain items. Slideshows are also included in the plans, which can be presented to students and are customizable allowing teachers to make the plans fit to their unique classroom and students. The plans have been shared with current high school teachers that have expressed excitement about the opportunity to share them with their colleagues.

Discussion

Discussion:

There were two problems addressed in completing this project. The first was a lack of outreach and awareness of the medical laboratory profession. The second was a lack of resources and activities that high school teachers could use to carry out engaging science lessons. Through creating these plans, I have combined these two problems and made a tool that addresses both. I know that I have addressed the first of these problems based on my research prior to creating the plans, which showed that MLS outreach and awareness is a world-wide issue. The articles that I read relating to MLS awareness mentioned issues with everything from what people should call us, to whether we even exist (2). My project provides an opportunity to get every student in the high school science classroom the opportunity to learn about medical laboratory science, which helps to eliminate this confusion and lack of awareness.

The second problem was one not directly related to MLS, but is an issue that resonates with me. As a former high school science teacher, I understand the struggle of trying to create or find engaging activities that will resonate with students. As an added layer, it is not always easy to find activities that don't need a lot of upfront planning and materials. With these lessons, teachers are provided with activities that are based on studies that have proven these types of activities to be engaging, the materials and instructions are easy to obtain and carry out, and they are exposing their students to a possible career choice, while hitting state science standards.

Once completing the lesson plans, I reached out to some science teachers to get their opinions on the project and how effective I was in meeting these goals. Becca Stump, a current high school science teacher noted, "These lessons would fit great into any life science or chemistry class. Not all students have the opportunity to explore careers in the biomedical field and these lessons create equity opportunities in public education." She also mentioned that she is "very excited to share these lessons with my science department." Statements like this from current teachers make me hopeful that this project will make an impact in both of the areas that I set out to address.

Conclusion:

This project set out to bring awareness to the medical laboratory profession, which is currently underrepresented, as well as provide high school teachers with resources to remedy this unawareness. This was accomplished through creating effective lesson plans with engaging activities that model real laboratory tasks. Teachers that use these plans give their students the opportunity to learn about an exciting, rewarding career that needs bright young people to join their workforce. Through the distribution of these plans, we can bring medical laboratory science out of the shadows and let people know who we are and what we do.

References

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