

Using School Compost Programs to Incorporate Workplace Readiness Skills into Agricultural  
Education Curriculum

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# Using School Compost Programs to Incorporate Workplace Readiness Skills and 21st Century Learning Skills into Agriculture Curriculum

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## ABSTRACT

The purpose of this project was to prepare activities and lesson plans associated with implementing a school composting program and determine how effective they were at teaching and reinforcing workplace readiness skills within agricultural education classrooms. Selected skills to focus on included communication, job specific math skills, and general employability skills. Materials created include a unit plan, nine individual lessons, activity instruction sheets and project rubrics. A survey to gather evaluation data for these materials was created, field tested, and modified to obtain more detailed data prior to implementation. A survey and materials were submitted to five middle school and five high school agricultural education teachers from the state of Virginia.

Results indicated that the majority of participants felt the selected activities and materials would support workplace readiness skills within the classroom, but that most were not interested in starting their own school wide composting programs due to time and money constraints. However, due to workplace readiness skills being universal and a core component of career and technical education, participants felt that the provided materials could be modified for use within their classrooms to suit their individual programs and student needs. Based on background research and data collected through this project, it is recommended that these materials be used within agricultural education classrooms to support and strengthen workplace readiness skills within the state of Virginia and help to better prepare students for the workforce.

## Table of Contents

### Introduction

- a. Background and Setting.....
- b. Statement of the Problem.....
- c. Purpose of the Project.....
- d. Project Objectives.....
- e. Definition of Terms.....
- f. Significance of the Problem.....

### Review of Literature

- a. Significance of Workplace Readiness Skills.....
- b. Workforce Preparation Through Agricultural Education.....
- c. Strategies for Incorporating Workplace Readiness Skills.....
- d. Composting as a Context for Developing Workplace Readiness Skills.....

### Project Methodology

- a. Targeted Population and Participating Audience.....
- b. Procedures.....

### Project Results, Discussion, and Recommendations

- a. Results and Discussion.....
- b. Summary & Conclusions.....

### References.....

### Appendices.....

- a. Appendix A : Composting Unit Plan and Materials.....
- b. Appendix B : Survey.....



## **Chapter I**

### **Introduction**

Agriculture must be a continuously changing field to meet the demands of consumers. As the need to produce a larger and safer food supply grows, agriculturalists are faced with the challenge to meet this demand through the incorporation and implementation of new technology and practices from farm to table. With this technology and ever changing industry, comes the need to train skilled workers who are able to perform the necessary skills to meet this challenge. Workers must be trained for all aspects of industry from entry level to managerial positions (Virginia Department of Education, 2013). When it comes to providing training for these workers, agricultural education can assist in preparing students for their role in the world as it has been considered “both “hands-on” and “minds-on” in intent, design, and delivery (Parr & Edwards, 2004).

A survey was conducted by The Conference Board Inc., the Partnership for 21st Century Skills, Corporate Voices for Working Families, and the Society for Human Resources Management groups to determine thoughts and attitudes that employers have on workplace readiness skills displayed by high school students and college students. Results indicated that not only do employers believe high school students are deficient in the 10 most important workplace readiness skill areas; but that an overwhelming 75.6% felt that the responsibility to prepare students for the workforce fell upon high school teachers (The Conference Board Inc. et al., 2006). Gerhard Salinger of the National Science Foundation also supports this idea stating that 21st century learning skills are “best learned in an academic setting” and that “these are skills everyone needs - not just for the workplace, higher education, or vocational/technical training - but for dealing with all aspects of life” (Koenig, 2011). To meet this changing demand

for a more competent and skilled workforce, changes must also occur within the classroom if agricultural education will rise to meet this challenge.

Curriculum that provides students with opportunities to develop the necessary skills to be contributing members of this emerging workforce are essential for adequately preparing students for real-world experiences. A shift towards incorporating 21st century learning skills or workplace readiness skills is being pursued by school districts across the country. These skills include critical thinking, problem solving, communication and collaboration and are considered necessary attributes when it comes to being successful in today's world (Partnership for 21st Century Learning, 2006).

Workplace readiness skills are now considered essential competencies in all agricultural education courses (Virginia's CTE Resource Center, 2016). These skills are broken down into three major categories and include personal qualities and people skills, professional knowledge and skills, and technology knowledge and skills (Virginia's CTE Resource Center, 2016). Preparing students for agriculturally related jobs is a critical component of agricultural education as it contributes to the economic growth of Virginia and makes "vital contributions to the ever-changing global economy" (Virginia Department of Education, 2013). Unfortunately, little information exists on how these skills can successfully be taught to students in a real world career based scenario. While the Virginia CTE Resource Center does provide a list of sample activities that can be completed with tasks, these activities are not in depth. Suggested activities are listed but require more work on the individual part of the instructor to create a lesson plan, prepare a set of instructions, and include a rubric. Access to the appropriate resources must be made readily available to agricultural education teachers if the expectation exists for students to leave the classroom with relevant experience that prepares them to enter the workforce.

While a shift towards focusing on workplace readiness in schools is occurring, another emerging trend is the incorporation of composting programs in schools as a way to foster environmental stewardship while allowing students to build transferable skills (Vermont Agency of Natural Resources n.d.). In July of 2015, Vermont passed the Universal Recycling Law which bans the disposal of any product that can be recycled, including food wastes with the expectation that all food waste be composted by the year 2020 (Bradley, 2015). School composting programs could be a viable solution for providing students with a focus area to practice and build on their workplace readiness skills. Schools who have participated in compost programs report that students who actively participate in implementing the program gain knowledge in multiple subject areas, personal responsibility, cooperation, and civic engagement (Vermont Agency of Natural Resources n.d.).

### **Statement and Significance of the Problem**

As workplace readiness skills have become more heavily emphasized within the past few years, little has been done to provide teachers with adequate examples of teaching activities that can provide their students with more opportunities to practice and become proficient in these skill areas. This problem prevents teachers from adequately preparing their students for the workforce. Trends in research indicate that employers are willing to teach their employees how to perform company/job specific skills, but that many employees come to them lacking the knowledge to perform basic job skills such as working as part of a team, following directions, being able to communicate effectively, and having the ability to solve job specific math problems (Deloitte Development, LLC., 2005). In order to effectively incorporate these skills into the classroom, it must be done in a way that provides students with meaningful learning opportunities.

Agricultural education teachers often lack adequate planning time to create materials for all subject areas from scratch. General school obligations, involvement in FFA activities, and keeping up with supervised agricultural experiences maintained by students requires teachers to manage large workloads. Teachers make attempts to keep content up-to-date in an effort to provide students with a quality education, but changes and updates must occur over time due to time restraints.

Agricultural education classes have a reputation for being hands-on and for preparing students for future careers by teaching them various workplace related skills. As potential careers for students begin to change, so must curriculum taught within the classroom. Due to the diverse subject matter that many agricultural education teachers have as part of their program course load, providing readily made classroom resources can be beneficial to teachers. Current trends indicate that students are lacking in skill areas based on being prepared for the workplace. While all jobs do not utilize the exact same skill-set, a basic set of skills are required by all jobs whether or not they are agriculturally related. If students possess this general skill set they will enter the workforce more prepared and can spend time focusing on specific job training once hired instead of completing remedial job training or being passed up for a job altogether. By exposing students to this general skill set in high school, it provides them more opportunities to learn and practice these skills until they are proficient in each area.

### **Purpose of the Project**

The purpose of this project is to provide agricultural education teachers with resources that can easily be implemented within existing course curriculum to improve student workplace readiness skill levels. A meaningful approach to incorporating these skills in the classroom is necessary to ensure that students are able to understand each workplace readiness skill and an



opportunity to successfully demonstrate each skill. The design and implementation of a school composting project will serve as the basis for incorporating workplace readiness skills into agricultural education courses. These activities are aimed to strengthen course content by providing students with hands-on skills that relate directly to the workforce.

Since new and veteran teachers often lack the necessary planning time to create educational materials from scratch that meet their exact needs, the creation of ready to use lessons and activities can assist in classroom preparation. By providing teachers with additional resources that meet state standards and are relevant to course content, it enhances the teaching experience and learning outcome for students. Readily made available teaching resources allow teachers the opportunity to immediately implement these activities in class or alter them to meet their individual program needs without spending an excessive amount of time.

Since all Virginia agricultural education courses list workplace readiness skills as the first 21 competencies for each course, the resources generated through the completion of this project will focus on those skills versus a specific set of competencies from a single agricultural education course. The workplace readiness skills this project focuses on have consistently been identified as skills that students need to be proficient in when entering the workforce (Partnership for 21st Century Learning, 2015 and The Conference Board Inc. et al., 2006). The following workplace readiness skills as defined by the Virginia CTE Resource Center will be the main focus of this project:

1. **WRS 1- Positive Work Ethic:** Comes to work every day on time, is willing to take direction, and is motivated to accomplish the task at hand;
2. **WRS 2 - Integrity:** Abides by workplace policies and laws and demonstrates honesty and reliability;

3. **WRS 3 - Teamwork:** Contributes to the success of the team, assists others, and requests help when needed;
4. **WRS 8 - Speaking and Listening:** Follows directions and communicates effectively with customers and fellow employees;
5. **WRS 9 - Reading and Writing:** Reads and interprets workplace documents and writes clearly;
6. **WRS 15 - Time, Task, and Resource Management:** Organizes and implements a productive plan of work; and
7. **WRS 16 - Mathematics:** Use mathematical reasoning to accomplish tasks.

### **Project Objectives**

While there is abundant research focused on employer perspectives on student workplace readiness skills and the need to incorporate methods of teaching students these skills, limited curriculum materials are made readily available to teachers. Objectives for the completion of this project were the following:

1. To develop classroom resources that can be implemented within Virginia agricultural education curriculum. Materials include a unit plan, individual lesson plans, activities to develop workplace readiness skills and workplace readiness skills evaluation rubrics.
2. To evaluate the educational effectiveness of classroom materials for implementing workplace readiness skills within the classroom as determined by agricultural education teachers.

### **Definition of Terms**

1. **Agricultural Education-** based on a three model approach that incorporates the study of agriculture and its related industries, participation on the youth organization FFA, and

maintaining a supervised agricultural experience (National FFA)

2. **Competency-** an ability or skill (Merriam-Webster)
3. **Compost-** a humus rich soil amendment made by composting which is the natural process of decomposition and recycling of organic material (Risse & Faucette, 2000)
4. **FFA-** a youth organization for students enrolled in agricultural education courses that focuses on helping students develop their potential for premier leadership, personal growth, and career success (National FFA Organization, 2016)
5. **Hands-on -** relating to, being, or providing direct practical experience in the operation or functioning of something (Merriam-Webster)
6. **Inquiry-based learning-** students are presented with a topic and develop their own question(s) that must be answered through creative thinking, applying prior knowledge to the current situation and making connections between observed results or potential outcomes (Parr & Edwards, 2004)
7. **Problem-based learning-** a teaching method where students are exposed to “real world” problems and challenges that allows them the opportunity to develop a deeper meaning of the subject area (Knight, 2013)
8. **Project based learning-** a teaching method that provides students with a complex question, problem, or challenge that encourages students to seek solutions through their own inquiry with guidance from the instructor as needed (Virginia Department of Education, 2013), creates authentic learning experiences for students to combine knowledge from multiple disciplines to enhance higher order thinking while combining knowledge from multiple content areas (Capraro, Capraro, & Morgan, 2013)
9. **Scaffolding-** allows students to engage in deeper thinking through the completion and

mastery of smaller tasks (Davis, 2015)

- 10. Service learning** - based on placing students in a real world experience that encourages students to learn academic skills, exhibit personal growth, and civic engagement to promote meaningful social change within a community (Clayton, 2000)
- 11. STEM (Science, Technology, Engineering, and Math) education** - engages students in complex problem solving where multiple solutions can exist, students determine solutions using a variety of skill sets that encompass multiple disciplines (Capraro, Capraro, & Morgan, 2013)
- 12. Understanding by Design** – planning lessons based on a backwards design approach that builds the lesson after determining the end goal to place more emphasis on understanding content versus just knowing content (Wiggins & McTighe, 2005)
- 13. Workplace readiness skills** - a combination of employability and college-readiness skills and behaviors that employers look for in their employees. Example skills include positive work ethic, communication, time management, basic math, critical thinking, and problem solving. (Virginia’s CTE Resource Center, 2016)
- 14. 21st century learning skills** -skills, knowledge and expertise students must master to succeed in work and life; it is a blend of content knowledge, specific skills, expertise and literacies (Virginia's CTE Resource Center, 2016).

## **Chapter II**

### **Review of Literature**

#### **Significance of Workplace Readiness Skills**

Results from a survey given to manufacturers that evaluated basic employee skills indicated that over 80% of the respondents agreed that they are experiencing a shortage of qualified workers (Deloitte Development LLC., 2005). This skills gap has an adverse effect on companies and their image in the public eye when it comes to customer service and product quality. Issues also arise from the prediction that this skills gap will continue causing jobs to go unfilled. Areas that employers place value on include teamwork, diversity, ethics/social responsibility, critical thinking, and communication skills to include both oral and written ability (Society for Human Resource Management, 2009). Bill Shore, Director for U.S. Community Partners, stated, “the numbers don’t bode well for the future—the future of our workforce. It is in our interest to help solve the problem. And business has the capacity to help solve the problem by partnering with education and community leaders to create opportunities for young people to practice the skills they need to be successful” (The Conference Board Inc. et al., 2006). With data indicating that a skills gap exists and industry noting that it is imperative for employers and educators to work together to address the issue, agricultural education can offer a solution to this problem by emphasizing the right skills.

#### **Workforce Preparation Through Agricultural Education**

When the U.S. Congress passed the Smith-Hughes Act in 1917, agricultural education received federal funding to support programs in public school systems (National FFA). As it stands today, there are over 800,000 students enrolled in agricultural education courses in grades six-adult across all 50 states including three U.S. territories. A variety of course offerings are

made available to students as part of the agricultural education curriculum. In Virginia alone, there are 48 different agricultural education course offerings for the 2015-2016 school year with examples such as Biological Applications in Agriculture, Veterinary Science, and Greenhouse Plant Production and Management (Virginia's CTE Resource Center, 2016). This reflects the diversity of the agricultural industry and how it has grown from a predominantly production based industry to one that includes over 200 agriscience related careers (Knight, 2013). While agricultural education has always had a focus on career preparation, the types of careers that students are being prepared for is changing. The industry is currently predicting that in Virginia the largest career growth will occur in the areas of veterinary science, environmental science, and landscaping fields with all agriculture career options generating 6,000 openings a year (Virginia Department of Education, 2013).

Agricultural education is designed as a three model approach that includes areas of instruction within the classroom and laboratory setting, participation within the student organization FFA, and student maintained SAE (supervised agricultural experience) projects (Croom, 2008). One could argue that the three model approach provides students with numerous opportunities to prepare for future careers through their exposure to basic background knowledge, the chance to gain experience in a related career field and enhance their personal leadership through club participation. Through a partnership between the Virginia Department of Education and Virginia's CTE Resource Center, information is prepared and made available to educators that encourage collaboration among all subject matters and work to correlate national standards and industry certification requirements for all career and technical disciplines offered in Virginia.

As the agriculture industry evolves, so do the agricultural education courses offered to

students. This is done in an effort to adequately prepare students for future careers in the agriculture industry. Through analyzing multiple studies based on employee performance, it was concluded that students were lacking in workplace readiness skills (Virginia's CTE Resource Center, 2016). To address this concern, Virginia's CTE Resource Center first implemented what is known as "Workplace Readiness Skills" in career and technical education courses, including agriculture in 1997 (Virginia's CTE Resource Center, 2017). The original list consisted of 13 workplace readiness skills, but was again revised in 2010 to include 21 different skills that make up the first competencies listed in each career and technical education course (Virginia's CTE Resource Center). These are considered "essential competencies," which means it is required for them to be taught by school educators. To assess student workplace readiness skills knowledge, students can take an examination based on these skills that assesses student reactions to varying scenarios. Results from the 2014-2015 workplace readiness skills examination indicated a 71.76% pass rate with the median score as 76.99 (Virginia's CTE Resource Center, 2016). While these scores can represent student learning, a survey of employers indicated that only 22% of the companies use tests as a means of employee assessment while 80% of those surveyed use job performance evaluations to rate employees (Society for Human Resource Management, 2009). If students are to be evaluated in a manner that is consistent of industry employers, evaluation methods must be changed to meet this current standard.

### **Strategies for Incorporating Workplace Readiness Skills**

An additional aspect of agricultural education is that the basic educational foundation it was built upon is consistent with trends in the broader education field. Problem-based learning is an educational approach that exposes students to "real world" problems and challenges that

allows them the opportunity to develop a deeper meaning of the subject area (Knight, 2013). Inquiry-based education shares some of the same similar qualities (Parr & Edwards, 2004) and is based on the idea of allowing students to develop their own learning centered question, determine the information to research or analyze, test hypotheses and communicate their results with others (Clark, Ewing & Foster, 2011). By introducing these types of instructional approaches within the classroom setting, it can lead to greater student interest and involvement in classroom activities as it encourages students to guide their own learning. This cross curricular approach exposes students to real life situations and provides students with the opportunity to apply skills learned in one area to another. Likewise, students who may be particularly strong in one content area but weaker in another, may be more engaged when multiple disciplines are explored through one project (Parr & Edwards, 2004). This type of collaboration between peers is a more realistic representation of what collaboration looks like in the career world and can put into perspective the importance of students becoming proficient in various workplace readiness skills.

A similar approach to problem-based and inquiry-based learning is that of STEM PBL which is based on authentic learning that is fostered through loosely defined tasks with a set of established design constraints (Capraro, Capraro, & Morgan, 2013). STEM combines 21st century learning skills while addressing global, environmental, and national security issues (Bybee, 2013) while project-based learning can consist of several problems that students must solve (Capraro, Capraro, & Morgan, 2013). With the Virginia Department of Education reporting that current data indicates an increase in science and technology skills being needed in future agriculture related careers, this combination of instructional methods and student learning styles can address those needs (2013). The challenge for educators lies in choosing instructional



units that relate to content and will provide students the opportunity to be immersed in a real world setting that fosters this type of learning.

While it is necessary to determine what methods and topic will be used to incorporate opportunities for students to develop workplace readiness skills within the classroom, focus should also be placed on proper lesson planning. If enough focus is placed on preparation ahead of time before teachers enter the classroom, teachers can plan for mindful learning to occur and serve as a facilitator for learning in the classroom. Understanding by design allows for meaningful planning since it is based on a backwards design approach that builds the lesson after determining the end goal (Wiggins & McTighe, 2005). The intention behind this approach is to put more emphasis on understanding content versus just knowing content (Wiggins & McTighe, 2005). The use of scaffolding in a classroom can support this form of classroom planning as it allows students to complete and master smaller tasks in order to develop a deeper understanding of material (Davis, 2015). Students can experience success on a smaller scale, which can build their confidence as they progress through the learning process (Davis, 2015).

### **Composting as a Context for Developing Workplace Readiness Skills**

A school-wide compost program can provide agricultural education programs a viable option for incorporating workplace readiness skills in the classroom through a hands-on practical approach. Compost is considered to be a humus rich soil amendment made through the natural process of decomposition and recycling of organic material (Risse & Faucette, 2000). Organic material for composting can easily be obtained through collection in the school cafeteria. Both pre-consumer and post-consumer waste can be collected; however it is easier to collect pre-consumer waste as there are no issues related to sorting food waste scraps (Risse & Faucette, 2000). The collection of food waste from the cafeteria for a compost program can not only serve

as a tool for implementing workplace readiness skills, but also provides benefits to the school and environment. Over 72% of the waste that enters a landfill can actually be reduced through composting methods (Risse & Faucette, 2000). Through participation in a school composting project, students can also gain a sense of civic duty due to the service learning nature of the project (Clayton, 2000).

Based upon these findings, this project will examine how the incorporation of a school based composting project can help to incorporate workplace readiness skills within classroom curriculum. A school compost program was chosen as it allows students the opportunity to participate in a real world problem to seek solutions. Through the incorporation of this problem-based learning experience students will need to work collaboratively to determine each aspect of the program. Examples include creating and implementing an advertising campaign, establishing a collection process, creating and filling job roles, and designing and maintaining a compost bin design based on research and program data collection. Students will also need to plan ahead to determine what will happen with completed compost material. Participating in this activity will allow students the opportunity to demonstrate their work ethic, integrity, and teamwork skills while improving their speaking and listening, math, and reading and writing skills. A series of classroom materials will be designed to address these skill areas and will be based on a STEM and project-based learning approach to maximize student learning opportunities. Materials created will focus on the engineering aspect as well as the mathematics aspect. Students will be provided an opportunity to design their own compost bin within a set of constraints and will then use that design to complete the math components of the curriculum. Classroom materials will be created and distributed to agricultural education teachers and will be evaluated for their effectiveness to be used within the classroom.

## **Chapter III**

### **Targeted Population and Participating Audience**

The targeted population for this project design consisted of both middle and high school agricultural education instructors in the state of Virginia. Teachers were contacted via e-mail and received a description of the project, sample materials as found in Appendix A, and a survey link with questions pertaining to the classroom materials. Teachers surveyed had a minimum of at least 10 years of teaching experience. Since all agricultural education classes include workplace readiness skills as essential competencies, teachers of all agriculture subject areas were included in data collection. Surveys were sent to 15 teachers in order to receive a total of 10 responses. A total of five teachers at the high school level and five teachers at the middle school level provided feedback by completing the survey questions as listed in Appendix B.

### **Procedures**

To conduct this study, the researcher created a series of classroom materials that included a unit plan, lesson plans, student activities and grading rubrics. Classroom materials included an Understanding by Designing unit plan that focuses on project based learning and activities that promoted student exploration of a topic to solve a real-world situation with the opportunity to implement the solution in real life. Materials included activities that could be incorporated within the project based learning unit to help promote selected workplace readiness skills. Rubrics were developed for each activity to provide clear expectations and intended outcomes for student work. These rubrics can be used as is or modified to meet specific needs of each teacher.

Materials were designed to engage students in meaningful work that allows for collaboration with peers in a manner to promote employability, communication, and job specific

math skills. This teaching approach fosters authentic learning and allows for flexibility within that classroom and student guided learning that is facilitated by the instructor.

A field test was conducted by sending out the created classroom materials and a survey to two agricultural education teachers. Each agricultural education teacher was asked to review the materials and rate them using a 5-point Likert-scale survey with the option to provide comments on each activity. Questions that identified basic information such as the specific courses taught, length of time teaching, attitude toward workplace readiness skills, and interest in implementing a school based compost program from each respondent were also collected through the survey. Of the teachers surveyed, one was a middle school teacher and the other was a high school teacher. The purpose of this field test was to determine the ease of completing the survey, length of time it takes to complete, receive general feedback upon completion of the survey, and to edit survey questions as needed to obtain more specific responses. Changes were made to the survey in terms of display and organization of materials to make it easier on survey participants to find relevant information when completing questions. An additional question was included at the end of each series of questions related to the selected workplace readiness skill. This change was made in response to field test survey participants not including any suggestions for improvements of the classroom materials with the intention of being able to collect information during the second round of survey collection. The final version of the survey is provided in Appendix B.

Once the field test was completed and adjustments were made, materials were distributed to a total of 15 selected agricultural education teachers within the state of Virginia. In order to meet the 10 person survey completion goal, the survey was submitted to 15 individuals in case several were unable to complete the survey within the given timeframe. The survey that each

participant received, which can be found in Appendix B, was broken down into sections based on the workplace readiness skills that were selected to incorporate within the classroom.

Selected workplace readiness skills were related to effective communication, job specific math skills, and employability skills. Each activity was evaluated on how well it would support workplace readiness skills within the classroom based on a scale of strongly agree, somewhat agree, neutral, somewhat disagree, and strongly disagree. Participants were also asked to provide suggestions for improving activities, opinions on workplace readiness skills, and opinions on starting a school composting program.

Once surveys were completed and returned, the researcher analyzed and compiled results. Data were displayed using bar graphs to indicate participants opinions of how effective the provided materials were at supporting workplace readiness skills within an agricultural education classroom. After compiling results, the researcher completed revisions to created materials in preparation for making materials available to all agricultural educators in the state of Virginia.

## **Chapter IV**

### ***Results and Discussion***

For this study, a variety of materials were created for agricultural education teachers to use within their classrooms. The materials created were based on a two week unit plan that included a total of nine lessons. Each lesson included an accompanying activity and rubric that can be used as is to promote the design and implementation of a school composting program. For those teachers that have no desire to start a school composting program, the materials can be adapted to be used in a variety of class subjects since workplace readiness skills are universal. While there are lessons focused specifically on improving student communication skills and job specific math skills, these lessons also support the development of general employability skills such as a positive work ethic, teamwork, and management of time, resources, and tasks. Specific topics for communication based lessons range from writing a letter, preparing an informational brochure and writing a press release. Lesson topics for job specific math skills include creating a data collection table, budget, scale drawing, and preparing a bill of materials. The unit plan, lessons, activity guidelines, and rubrics can be accessed in Appendix A.

A total of 10 participants completed the survey questionnaire about the effectiveness of the classroom materials to support workplace readiness skills within the agricultural education classroom. Of the participants surveyed, five were teachers at the middle school and five were at the high school level. Years of teaching experience for the participants surveyed ranged from 11 to 31 years. Participants also provided information on agricultural education courses taught. All middle school teachers taught the same three courses available at the middle school level which are introduction to agriscience, agriscience exploration, and agriculture technology. Course subject areas taught by high school teachers included small engines, vet science, horticulture,

natural resources, agriculture production, and animal science.

### Communication Skills

The first set of activities participants were asked to evaluate were writing an invitation letter, creating an informational brochure, and writing a press release. Specific activities can be found in Appendix A. These activities were created to support effective communication.

Suggestions for improvement made by survey participants were based on modifications for student ability levels, technology availability, and extension activities. Lessons were changed to include all suggestions generated through the survey and include: providing students the option of filling in templates, using computers, and having a public relations specialist visit students in the classroom to serve as an expert resource. The majority of survey participants strongly agreed that the provided materials supported the selected workplace readiness skills within the classroom. Detailed survey results for this set of questions and materials are shown in Figure 1 below.

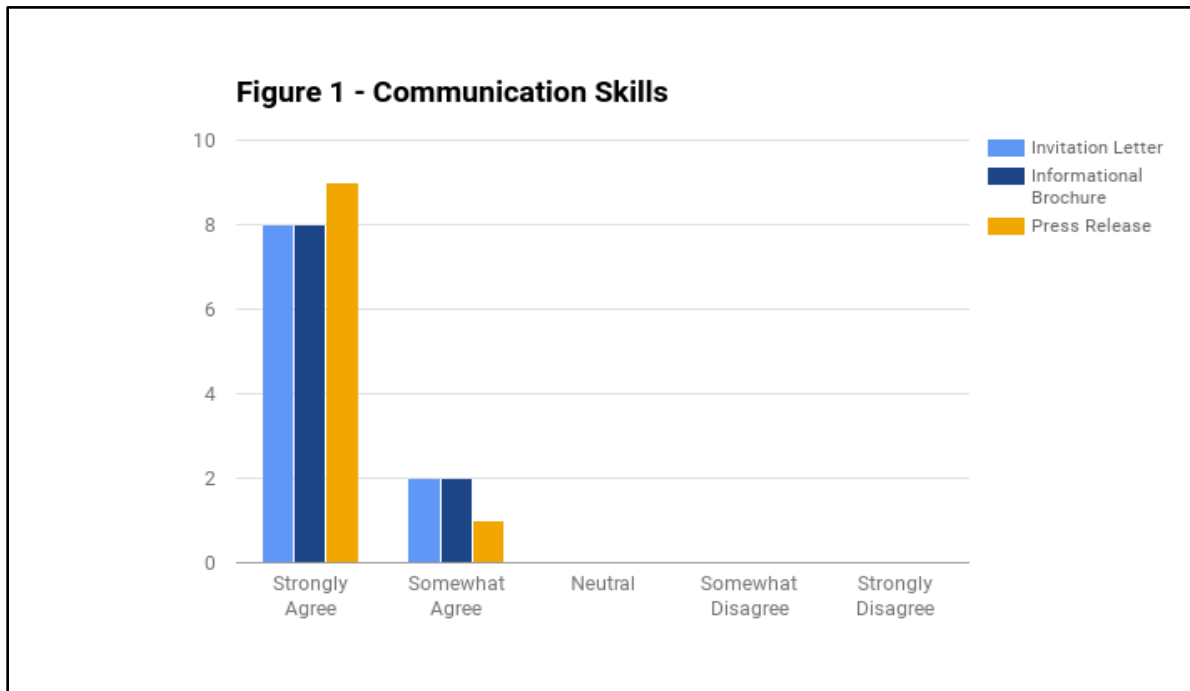


Figure 1- This figure shows the survey results on how effective each activity was at supporting

communication skills within the classroom.

### Job Specific Math Skills

The second set of activities participants were asked to evaluate included the creation of a data collection table, scale drawing, calculating a bill of materials, and creating a budget. These activities were created to support the use of job specific math skills. The majority of survey participants somewhat agreed or strongly agreed that the provided materials supported the selected workplace readiness skills within the classroom. Suggestions for improvement included building small scale models of actual designs, using industry recognized software if available, and working in small groups with assigned jobs for each member. It should be noted that one participant somewhat disagreed with the scale drawing activity supporting job specific math skills. The participant provided feedback that the scale drawing activity would not be valuable within their classroom since the concept has been difficult for them to teach in the past and the time needed to implement the activity in the classroom would not be a beneficial use of time. Detailed survey results for this set of questions and materials are shown in Figure 2 below.

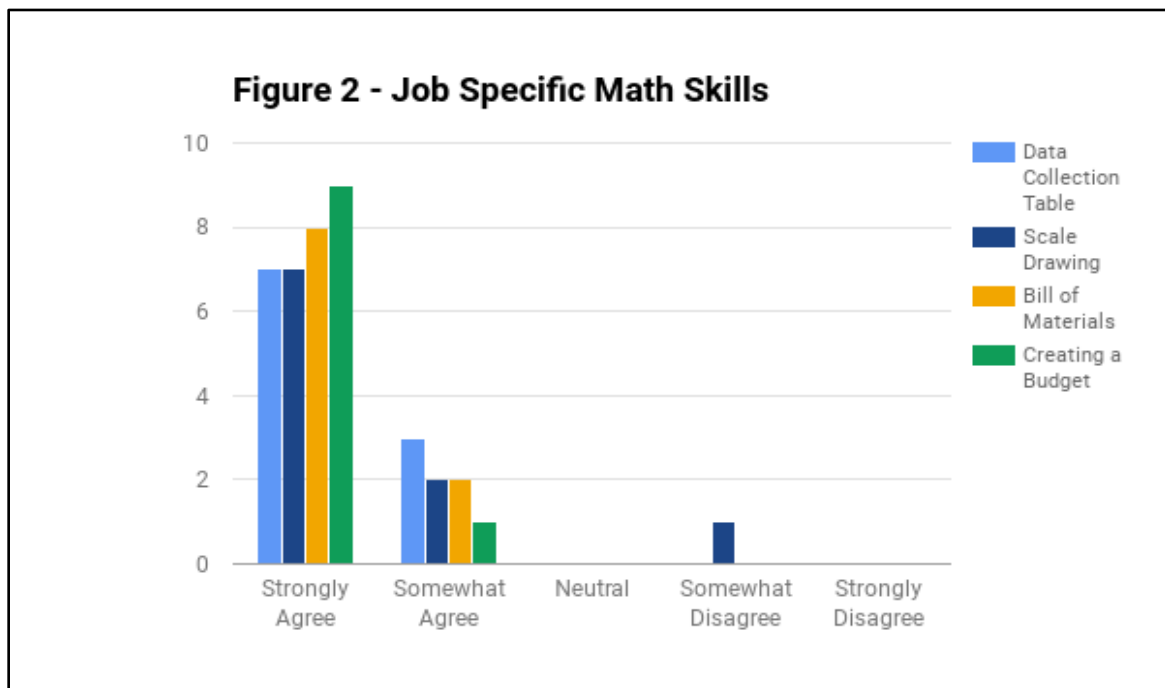




Figure 2- This figure shows the survey results on how effective each activity was at supporting job specific math skills within the classroom.

### Employability Skills

For the third set of questions, participants evaluated all of the provided activities for how well they promoted employability skills within the classroom. These skills included a positive work ethic, integrity, teamwork, and time, task and resource management. The majority of survey participants strongly agreed or somewhat agreed that the provided materials helped to support workplace readiness skills within the agricultural education classroom. It should be noted that one participant somewhat disagreed with the scale drawing activity as being able to support employability skills within their classroom. Feedback provided by the participant as a suggestion for improvement explained that their program was not equipped with a workshop area or tools to actually build the project once completed. They felt it would be more beneficial to compare pre-existing compost bin designs, select one, and then assemble the pieces once purchased. No additional suggestions for improvement were made for this portion of the survey. Detailed survey results for this set of questions and materials are shown in Figure 3 below.

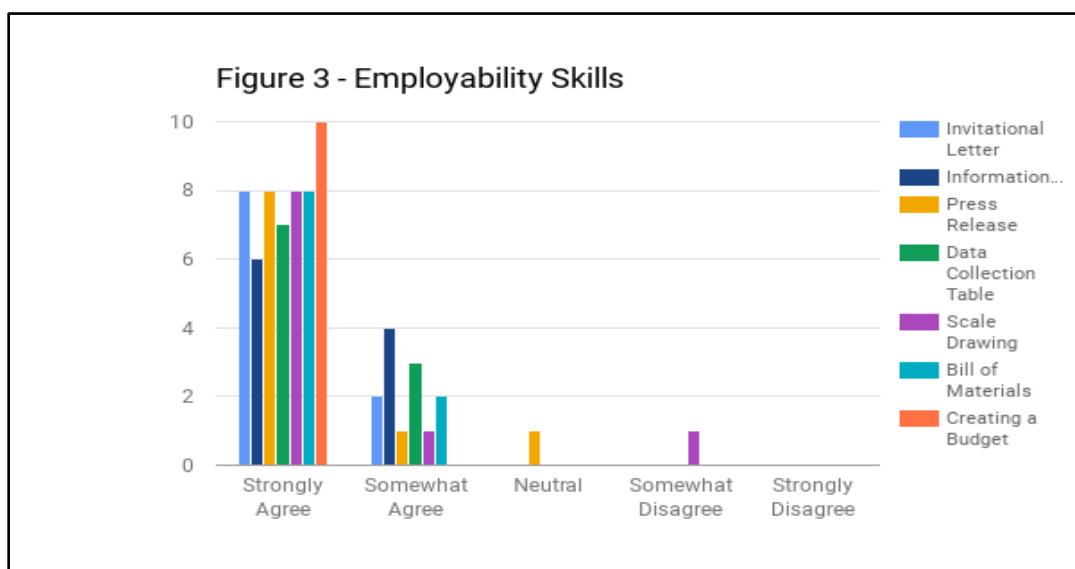


Figure 3 - This figure shows the survey results on how survey participants felt each activity was effective at supporting employability skills within the classroom.

### **General Comments**

All survey participants agreed that workplace readiness skills were necessary to incorporate within the agricultural education classroom. Likewise, participants also felt that they could use the provided materials as is or with slight modifications to meet their program needs or student abilities. In addition to having participants evaluate the created materials on how well they supported workplace readiness skills, participants were also asked if they felt the provided materials could be easily adapted within the classroom to meet their needs and if they would consider actually implementing a composting program at their school. Out of the 10 participants surveyed, nine felt that it would be easy to modify the activities to suit their individual needs and one felt that they might be able to easily modify the materials. In regards to implementing a composting program in their schools, two participants said they would, three said no, and five said they would consider starting a program.

### **Suggestions for Improvement**

Overall suggestions made to improve materials were based on a variety of reasons from available resources, student ability, and delivery of content. Resources mentioned by participants included technology, space, time, money and school support in regards to completing some of the activities and actually implementing a school composting program to help incorporate workplace readiness skills within their program.

Middle school teachers made suggestions to provide students with more examples and simplified activities to still teach students the concepts, but to do so through simplifying tasks. This was comparable to the scaffolding approach used with the provided unit plan that broke

larger tasks into smaller pieces allowing students to master individual skills before moving on to more difficult tasks. The delivery of content was suitable for their students, but content needed modification which can be expected due to student skill sets.

High school teachers made suggestions that were more directly related to modifications for teaching the activity. These suggestions ranged from simplifying rubrics, allowing group discussion or adding specific questions to a discussion since little to no modification suggestions were made to the actual activities, only in the delivery of content. A list of suggestions for each activity has been included below. These changes have been made to the activities in Appendix A and were listed as modifications or extensions for each activity based on the suggestion.

<b>Activity</b>	<b>Suggestions</b>
Writing an invitation letter	<ul style="list-style-type: none"> <li>● Invite an English teacher to read the letters and provide feedback. You could also partner up and co-teach with an English teacher for the activity.</li> <li>● Follow up with a thank you letter to the guest speaker.</li> <li>● Students with disabilities could develop a script or guide for a personal or phone conversation with a potential guest speaker and practice on another faculty or staff member??</li> </ul>
Creating an informational brochure	<ul style="list-style-type: none"> <li>● The option for a digital format to present this information to help students who struggle with handwriting.</li> <li>● Turn the brochure into a one page informational sheet. This may make it easier for students to create than a brochure.</li> <li>● Include a brochure template.</li> </ul>
Creating a press release	<ul style="list-style-type: none"> <li>● Potentially include an example or require students to find an example first and analyze it using your rubric to determine its quality</li> <li>● Invite a journalist or local newspaper person to come in and explain what they do</li> </ul>

	<ul style="list-style-type: none"> <li>● After all of the press releases have been turned in, you could have the class choose the one that's the best, and then actually send it to the local newspaper to be printed.</li> <li>● Provide a template for middle school students so they can focus more on the content of the press release.</li> </ul>
<p>Creating a data collection table</p>	<ul style="list-style-type: none"> <li>● Instead of completing a bill of materials to collect data, students could collect information on different types of composting systems that are available.</li> <li>● This activity would have to be modified and much more guided for the middle school classroom. Many students would have a hard time determining what types of data should be collected, how often etc. I think you would have to give them choices and have them identify the sources from there.</li> <li>● Seek out examples and tips from math teachers at school.</li> <li>● My suggestion would be to give them example data table such as how much does it cost to own a pet. In a small group they have to fill in the blanks.</li> </ul>
<p>Scale drawing</p>	<ul style="list-style-type: none"> <li>● For any of these activities, since this is middle school, it might work well to have them each be responsible for certain tasks or roles. For example - supervisor, quality control, communications specialist, etc. They could rotate in order for them to each have the experience.</li> <li>● Computer CAD program or something similar that actually does drawings</li> <li>● Add a video of an example of someone using a scale drawing in their occupation.</li> <li>● Students could actually build their design using popsicle sticks (or something else).</li> <li>● This would help with scale, and would help</li> </ul>

	learners that actually need to see a project in 3-dimensional view, not just on paper.
Bill of materials	<ul style="list-style-type: none"> <li>● A classroom extension would be to build one of them in a small group with simple supplies.</li> <li>● I would modify this activity and have students collect information on different types of composting units available. I would then have students choose a composting unit and develop a list of materials necessary to put it into practice.</li> <li>● Students could research possible grants that could provide funding to build the compost boxes.</li> </ul>
Creating a budget	<ul style="list-style-type: none"> <li>● Create a game that is played where students earn money and budget. Prizes at the end.</li> </ul>

Table 1- This table provides a complete list of suggestions for improving classroom activities that were compiled from survey results.

## Chapter V

### *Conclusions and Implications*

Based on the surveys collected, it can be concluded that the majority of survey participants felt that the created classroom materials did support the selected workplace readiness skills or that they could modify them to meet their individual needs. It can be concluded that these materials would be successful within the classroom because of the approach taken in creating them. It is important that materials like these be made available to teachers for use in their classrooms due to the fact that they can provide students with career preparation and because of student engagement that is generated from project based learning (Capraro, Capraro & Morgan 2013). Materials within the composting unit provide students the opportunity to actively engage in their learning through the creation and implementation of a school composting program. This serves as a relevant hands on experience that encourages students to seek solutions to real world problems through the use of STEM while also developing workplace readiness skills (Capraro, Capraro & Morgan, 2013). Each of the activities that promote job specific math skills, in particular the scale drawing activity reinforce STEM concepts by supporting both engineering and math. By using the UbD approach to lesson planning, the learning outcomes are first established and activities are designed to meet these learning goals (Wiggins & McTighe, 2005). This approach combined with scaffolding allows students to master small skills and apply that knowledge to the a more large scale project allowing them to be more successful (Davis, 2015). Creating a bill of materials found in Appendix A is an example of using scaffolding to assist students in understanding how to complete the activity. Students must first identify components of a bill of materials, then learn how to calculate board feet for lumber, and finally prepare a total of all materials. Each step must be mastered before

moving on to the next making it easier for students to be successful rather than expecting them to complete each task all at once.

While all teachers may not start a composting program, results of this study indicate that these activities can be used in other ways and applied to other aspects of agricultural education classrooms. For those programs that do not wish to or are unable to start a composting program, activities such as scale drawings and a bill of materials can be applied to aspects in the woodworking shop. Activities such as these are important in careers related to engineering and construction. Incorporating these within the classroom teaches students fundamental skills they can apply within the workforce, which is what employers want to see with their future employees (Human Resource Management, 2009).

General comments from both middle and high school teachers suggested that the provided activities are more suited for the high school level in terms of skill and ability level. Materials are still suitable to use at either grade level, but may some may require more modifications to better suit the individual teacher's needs. Changes made to the provided materials were based on suggestions from survey participants as described in Table 1. Some of those changes included incorporating the use of technology such as computers or design software if available and providing students with templates for the communication activities. Additional changes were also made to include extensions to an activity that included interviews with the local news station and creating a website to advertise the composting program. Please refer to Table 1 in the results section to see a complete list of suggestions for each activity.

### **Recommendations**

All teachers surveyed felt that incorporating activities that reinforced workplace readiness skills were necessary components of the agricultural education classroom. Work should be

continued in this area to further develop materials teachers can implement within the classroom. These materials should be created through collaboration from both agricultural education teachers and industry representatives. By including both parties in this discussion, it allows an open dialogue to focus on what skills students are deficient in from the standpoint of industry representatives. Likewise, industry representatives can provide guidance on specific job skills employees should have for various career fields based on equipment or software that is used by representatives in their field.

It is recommended that teachers of subject areas related to natural resources or horticulture implement the classroom activities as much as possible in their original form since the subject matter can most closely relate to composting and the benefits associated with it. For those agricultural education programs interested in implementing a school composting program within their school, it is also recommended to collaborate with other content areas within their schools. By doing so, it allows non agriculture students within the school to become involved and can provide opportunities for students to further develop their communication skills and general employability skills. An additional benefit is that the workload for starting and maintaining the program can be equally shared within the school making the program more manageable. For teachers of different subject areas, the composting component can be removed as a main focus of the lessons and the activities created can be still be integrated into their course structure.

During the implementation of the composting program, students are evaluated on their ability to be proficient in the selected workplace readiness skills. To determine student growth and mastery of workplace readiness skills, activities could be applied to different subject matters within the classroom to gauge student growth during the year. Students could even take part in



the activity by setting a goal of where they want their skill level to fall at the end of the year and determining steps necessary to meeting that goal. Feedback can be provided throughout the year from graded activity rubrics. Teachers and students can meet to discuss the results and make any necessary adjustments for students to be able to meet their goal.

While many localities within Virginia have career and technical advisory boards and industry professionals are included in discussions for updating agricultural education curriculum, board members and industry representatives should be included in the creation of materials used within the classroom and the evaluation of these materials. Students must be given real world relevant hands on learning experiences within the classroom to help provide them with proper career preparation. Further studies could also be conducted to examine the correlation between in class career preparation and Supervise Agricultural Experiences (SAE) for students to determine if classroom preparation is actually preparing students for work experiences both on and off the farm. Surveys could be created and given to both students and SAE supervisors to compare how well students were prepared to be placed in a work type setting outside of school.

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## **Appendix A**

### **Developing Workplace Readiness Skills Through Designing and Running a School Composting Program**

#### **Unit Plan**

**By: Amanda L. Curry**

This unit and set of classroom materials has been designed for high school students enrolled in agricultural education programs across the state of Virginia. The content is focused on designing and running a school compost program through a project based learning approach while strengthening student workplace readiness skills through chosen activities. Materials can be adapted to fit various courses and student learning abilities. The entire unit will take approximately two weeks but lessons can be changed to suit the individual teacher's needs. Lessons have been developed for a block schedule with classes lasting for one hour and thirty minutes each.

## Table of Contents

1. Workplace Readiness Skills
2. Unit Lesson Plan
3. Scaffolding
4. Composting Project Based Learning Scenario
5. Intro to Composting Lesson Plan
  - a. Compost Pre Test
6. Intro to Workplace Readiness Skills Lesson Plan
  - a. Workplace Readiness Skills Pre Survey
  - b. Workplace Readiness Skills Scenarios
7. Communication Skills Activity Outline
8. Writing a Letter Lesson Plan
  - a. Writing a Letter Instructions
  - b. Letter Rubric
9. Creating an Informational Brochure Lesson Plan
  - a. Informational Brochure Instructions
  - b. Informational Brochure Rubric
10. Writing a Press Release Lesson Plan
  - a. Press Release Instructions
  - b. Press Release Rubric
11. Job Specific Math Skills Activity Outline
12. Data Collection Charts Lesson Plan
  - a. Creating A Data Collection Table
  - b. Data Collection Rubric
13. Compost Plan Drawings Lesson
  - a. Compost Plan Drawing Instructions
  - b. Compost Plan Drawing Rubric
14. Compost Bin Bill of Materials Lesson Plan
  - a. Bill of Materials Notes
  - b. Bill of Materials Activity
15. Creating a Budget Lesson Plan
  - a. Creating a Budget Instructions
  - b. Compost Operating Budget
16. Employability Skills Rubric
17. Student Log Sheet
18. Compost Post Test
19. Workplace Readiness Skills Post Survey

## Workplace Readiness Skills

Workplace readiness skills are an essential part of all agricultural education courses and help students develop the skillset to become valued employees in the job field they choose to pursue. A set of 21 skills have been identified by the Virginia Career and Technical Resource Center. A full list of skills can be referenced using the source listed below. The following workplace readiness skills can be demonstrated by students through the completion of the corresponding lessons and activities:

1. **WRS 1- Positive Work Ethic:** Comes to work every day on time, is willing to take direction, and is motivated to accomplish the task at hand,
2. **WRS 2 - Integrity:** Abides by workplace policies and laws and demonstrates honesty and reliability,
3. **WRS 3 - Teamwork:** Contributes to the success of the team, assists others, and requests help when needed,
4. **WRS 8 - Speaking and Listening:** Follows directions and communicates effectively with customers and fellow employees,
5. **WRS 9 - Reading and Writing:** Reads and interprets workplace documents and writes clearly,
6. **WRS 15 - Time, Task, and Resource Management:** Organizes and implements a productive plan of work; and
7. **WRS 16 - Mathematics:** Use mathematical reasoning to accomplish tasks.

### References:

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## Understanding by Design Unit Plan

This unit plan follows the Understanding by Design (Wiggins & McTighe, 2005) approach which is developed following a backwards design approach that determines the end results of the unit first followed by the steps to achieve the end results. The unit plan is broken into three different stages that focus first on the outcome of the unit, student assessment, and a list of activities to implement in class. Each of the activities outlined in the unit plan are included as detailed lessons plans that also include activity instructions and rubrics for assessment.

### Summary of the Unit:

This unit will introduce students to concepts associated with composting through a problem based learning approach. Students will work to develop workplace readiness skills through the design and implementation of a school based composting program.

### Stage 1 – Desired Results (Acquisition, Meaning Making and Transfer)

Key Standards:

1. **WRS 1- Positive Work Ethic:** Comes to work every day on time, is willing to take direction, and is motivated to accomplish the task at hand.
2. **WRS 2 - Integrity:** Abides by workplace policies and laws and demonstrates honesty and reliability.
3. **WRS 3 - Teamwork:** Contributes to the success of the team, assists others, and requests help when needed.
4. **WRS 8 - Speaking and Listening:** Follows directions and communicates effectively with customers and fellow employees.
5. **WRS 9 - Reading and Writing:** Reads and interprets workplace documents and writes clearly.
6. **WRS 15 - Time, Task, and Resource Management:** Organizes and implements a productive plan of work.
7. **WRS 16 - Mathematics:** Use mathematical reasoning to accomplish tasks.

**Transfer:** Students will be able to demonstrate an understanding of workplace readiness skills and procedures and apply this knowledge to future projects or career situations.

**Meaning Making:** Students will understand and keep considering...

Understandings: *Students will understand that...*

1. Everyday actions can have negative or positive impacts on the environment.
2. Demonstrating a positive work ethic, integrity, and teamwork are necessary skills to be successful in all careers.
3. Speaking, listening, reading, and writing skills are essential to communicate effectively in a workplace environment.
4. Managing time, tasks, and resources is necessary to establish a productive workplace environment.
5. Math skills are used to accomplish different tasks in a workplace environment.

Essential Questions (Long Term and Topical):

1. What impact do humans have on the environment?
2. What skills do employers look for in employees?
3. Why do employers value employees who can successfully demonstrate workplace readiness skills?
4. What character traits are associated with demonstrating a positive work ethic, integrity, and leadership?
5. Why are verbal and written communication techniques valued in the workforce?

6. How can positive workplace readiness skills be useful in other aspects of life?

### Acquisition of Knowledge and Skill

Knowledge: *Students will know...*

1. Benefits of composting food scraps to reduce food waste entering landfills.
2. Benefits of compost as a soil amendment.
3. Traits associated with a positive work ethic.
4. Workplace policies and procedures to follow while working.
5. Importance of demonstrating a positive work ethic, integrity, and teamwork skills in a workplace environment.
6. Importance of demonstrating effective written and verbal communication skills when working collaboratively in a workplace environment.
7. Importance of demonstrating proper time, task, and resource management within a workplace setting.
8. How to collect and analyze data accurately.
9. How to calculate costs for constructing a compost bin.
10. Components of a budget and how to prepare a one year operating budget.
11. How to determine scale and prepare drawings that represent the chosen scale.

Skills/Performance: *Students will be able to...*

1. Demonstrate a positive work ethic.
2. Demonstrate integrity.
3. Demonstrate teamwork skills.
4. Demonstrate effective written and verbal communication skills.
5. Demonstrate time, task, and resource management.
6. Demonstrate work related math skills.

## Stage 2 – Assessment Evidence

Performance Task or Other Key Evidence of learning (What will *students understand and/or be able to do?*)

1. Students will create a compost guide book for collection and program maintenance procedures.
2. Students will demonstrate communication skills through group collaboration, writing a letter, creating a marketing brochure, and writing a press release.
3. Students will demonstrate job specific math skills by creating a scale drawing of a compost bin design, calculating a bill of materials, and maintaining compost collection data totals.
4. Students will demonstrate teamwork through group collaboration during class activities
5. Students will demonstrate integrity, a positive work ethic, and time, task and resource management through participation in class activities.

**Key criteria** to measure Performance Task(s) or Key Evidence:

1. Rubrics will be used to measure student achievement for all performance tasks
  - a. Based on completion of required project components and ability to demonstrate specified workplace readiness skills

**Other Evidence** to reflect student learning (formative and/or summative measures)

1. Student pre and post survey (Workplace readiness skills)
2. Student self-reflection sheets
3. Individual and student log sheets
4. Compost data collection sheets



### Stage 3 - Learning Plan, Experiences, and Instruction:

**Learning Activities:** Consider the **WHERE TO** elements – Who’s the Hardest Working Person in the Room?

	The teacher will...	The student will...
<p><b>W</b> Where are we going? What is expected?</p>	<p>Plan unit activities and pacing guide</p> <p>Provide guidelines for compost program design and establishment</p> <p>Prepare materials for students</p> <p>Provide feedback as needed and serve as a resource to students</p> <p>Facilitate class discussions and classroom meetings</p>	<p>Be expected to participate in all class discussions and complete activities as assigned</p> <p>Create and present a plan to implement a school compost program from start to finish</p>
<p><b>H</b> How will we hook (Introduce this to) the students? How will we pre-assess student knowledge, understanding and skills to inform instruction?</p>	<p>“How Long It Takes Activity”</p> <p>Present students with the driving question for the unit</p> <p>Prepare and administer workplace readiness skills pre-survey</p> <p>Prepare and administer compost pre-test</p>	<p>Prepare a series of questions that will need to be researched to answer</p> <p>Complete workplace readiness skills survey</p> <p>Complete compost pre-test</p>
<p><b>E</b> How will we equip students for expected performances?</p>	<p>Present students with a project guideline rubric and check for understanding</p> <p>Present project logs</p>	<p>Review project rubric and discuss expectations with both the teacher and classmates</p> <p>Organize project materials/notebook</p>
<p><b>R</b> How will we rethink or revise? (on-going, formative, keep coming back as needed)</p>	<p>Prepare check points with students as they work and hold individual group meetings</p>	<p>Complete project log and self-reflections each day work is completed in project</p> <p>Meet with teacher individually and with groups as needed/scheduled</p>
<p><b>E</b> How will students self-evaluate and reflect their learning?</p>	<p>Provide students with a pre/post survey on workplace readiness skills</p> <p>Daily logs on group/individual work with self-performance evaluations</p>	<p>Complete workplace readiness skill surveys</p> <p>Maintain student log sheets</p>
<p><b>T</b> How will we tailor learning to varied needs, interests, and learning styles? (differentiation, accommodation, modification)</p>	<p>One on one assistance as needed</p> <p>Small groups</p> <p>Modified assignments as needed</p>	<p>Assist classmates as needed</p> <p>Small group collaboration</p> <p>Assignments based on student ability as needed</p>

<p><b>O</b> How will we organize the sequence of learning? (please include the sequence)</p>	<ol style="list-style-type: none"> <li>1. Administer compost pre-test</li> <li>2. Introduce compost project through “How long it takes” Activity <ol style="list-style-type: none"> <li>a. Split class into groups of 4</li> <li>b. Provide each group with pictures of various items normally thrown in the trash and separate papers with the date for how long it takes each item to decompose</li> <li>c. Discuss answers and which items could either be recycled or composted</li> </ol> </li> <li>3. Present driving question to share expectations, assign groups and allow students to establish project goals.</li> <li>4. Administer workplace readiness skills pre-survey to determine student perceptions on the importance of the highlighted skill areas</li> <li>5. Facilitate workplace readiness skills discussion based on student scenario answers</li> <li>6. Individual meetings will be held with students to discuss research areas. Make suggestions for changes in project focus or recommendations on what to explore further.</li> <li>7. Provide collaborative time as needed within groups to complete student work. The following assignments will be included as mini units within group when deemed necessary by the instructor: <ol style="list-style-type: none"> <li>a. Writing a letter</li> <li>b. Designing a compost bin and creating a scale drawing</li> <li>c. Calculating a bill of materials</li> <li>d. Create a budget</li> <li>e. Creating an informational brochure</li> <li>f. Writing a press release</li> </ol> </li> </ol>	<ol style="list-style-type: none"> <li>1. Students will work collaboratively to pair up items with decomposition rates, discuss answers and discuss which items could be recycled or composted</li> <li>2. Work collaboratively in assigned groups to address needs of the driving question, determine project goals, and create a list of questions group members have about establishing a composting program</li> <li>3. Take compost pre-test</li> <li>4. Complete workplace readiness skills survey and share thoughts on different skills listed</li> <li>5. Students will meet with groups to complete workplace readiness skills scenarios and participate in a class discussion</li> <li>6. Meet with instructor to discuss progress and direction that research is headed in. Change research direction or investigate further as recommended.</li> <li>7. Use time as assigned in class to work on completing the activities as assigned in class. Individual lessons have been provided to include specific details for all activities.</li> </ol>
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**Special Needs (include all learners on the continuum from disabled to gifted & twice exceptional)**

Modifications (changes to the Core standard(s) and level of proficiency expected):	Accommodations (supports or instructional adjustments):
<p>Writing assignments can be modified as necessary to accommodate student IEP's</p> <p>Students on behavioral improvement plans can have modified proficiency levels on workplace readiness skills rubrics. Once expectations are consistently met, student outcome can be re-evaluated</p>	<p>One on one assistance as needed</p> <p>Small grouping</p> <p>Modified assignments</p>

**Plans for after this lesson/competency is complete (How will you extend, enrich?):**

<ol style="list-style-type: none"> <li>1. Composting program and marketing campaign can run throughout the school year. Students can have meetings each quarter to evaluate the success of the program and make changes as needed to ensure program success.</li> <li>2. Activities that incorporate workplaces readiness skills can be included in other units of instruction throughout the course of the school year.</li> <li>3. Other content areas can become involved in the compost program allowing students to make further connections between content areas.</li> </ol>
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**Key Resources Used:** Websites, books, film clips, etc.

Type of Resource(s):	Name of Resource(s):
Technology	Computer/Chromebook, calculator, camera, printer
Computer software	Microsoft Word, Powerpoint, Excel
Teacher created materials	Rubrics, activity sheets
“How Long it Takes” Activity	<a href="http://www.cvwma.com/storage/File/Trashytimelinekit.pdf">http://www.cvwma.com/storage/File/Trashytimelinekit.pdf</a>
Additional materials	Sample brochures, sample letters

## SCAFFOLDING

This scaffolding chart has broken down the major student objectives for the completion of this project into smaller skills and tasks that allow students to master skills before moving on to the next steps. This allows students to understand the work they are given and have a greater mastery over student competencies.

### Transfer (Advanced)

How will the students apply their understanding to complete the culminating project?

Consistently demonstrates workplace readiness skills at a satisfactory or above rating	Create a presentation on the design, marketing and implementation of a school wide compost program and present to a panel of school and community members	Implement a student run school composting program and maintain data records on collected compostable materials
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### Understanding and Mastery

How will you help students experience the key ideas and explore the issues?

Describe importance of developing positive workplace readiness skills for future careers	Describe ways to demonstrate a positive work ethic, integrity, teamwork and communication skills, management of time, tasks, and resources	Work collaboratively with classmates, instructor and industry experts to generate new ideas	Establish guidelines and procedures for a school compost collection program
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### Skills and Vocabulary (Know)

Vocabulary and basic skills. This also includes previously covered vocabulary and skills.

Define workplace readiness skills	Define compost, pre consumer/post-consumer waste	Define work ethic, integrity, teamwork, communication, management,	Identify key components to establishing a school compost project	Identify resources within the community from community members and industry leaders
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## **Composting Project Based Learning Materials**

The following sheet can be given to students to provide them with specific information about their role, anticipated outcome, and evaluation. This outline can be used to introduce the project based learning scenario.

### **Goal**

- Your task is to advertise, design, run, and maintain a school composting program.
- The goal is to reduce food waste by 100 pounds per week.
- The problem or challenge is working with a limited budget and getting everyone in school involved.
- The obstacles to overcome are working with a limited budget of \$750.00

### **Role**

- You are project manager at an environmental firm.
- You have been asked to be involved in all stages of the project design and implementation.
- Your job is to see the project from start to finish and make necessary changes along the way to ensure the success of the program.

### **Audience**

- Your clients are school administration and school board office representatives.
- The target audience is the student population and school staff.
- You need to convince the student population, school staff, and school officials to adopt and participate in a school wide composting program.

### **Situation**

- The context you find yourself in is competing against other environmental firms to create the best compost program for a school.
- The challenge involves dealing with limited resources and space.

### **Product, Performance, and Purpose**

- You will create a marketing campaign in order to advertise the benefits of composting and to encourage other students to participate in the program.
- You will create a set of project design plans and a bill of materials in order to build a compost bin that can handle 750 cubic feet of compostable materials.

- You will create a compost maintenance plan that includes taking data, performing routine checks, and
- You need to develop a schedule so that all tasks are completed in a reasonable timeframe and can be implemented before the school year ends.

### **Standards and Criteria for Success**

- Your performance needs to include a written invitation letter, informational brochure, press release, project plans, bill of materials, data chart, and operating budget.
- Your work will be judged by a group of students and adults.
- Your performance must meet the following standards as defined by your evaluation group for each individual task.

\*Grant P. Wiggins, J. M. (2005). *Understanding by Design*. Association for Supervision and Curriculum Development.

## **Introduction to Composting**

The purpose of this lesson is to introduce students to the idea of a composting program and to determine what background knowledge they already have. This lesson will set the tone for the remainder of the unit by presenting students with the project based learning scenario.

<b>Lesson Plan- Introduction to Composting</b>	
<b>Prep Time: 20 minutes</b>	
<b>Length of Lesson: 1 block – 1 hour 30 minutes</b>	
<b>Competencies:</b>	
<ol style="list-style-type: none"> <li>1. WRS 1- Positive Work Ethic: Comes to work every day on time, is willing to take direction, and is motivated to accomplish the task at hand.</li> <li>2. WRS 2 - Integrity: Abides by workplace policies and laws and demonstrates honesty and reliability.</li> <li>3. WRS 3 - Teamwork: Contributes to the success of the team, assists others, and requests help when needed.</li> <li>4. WRS 8 - Speaking and Listening: Follows directions and communicates effectively with customers and fellow employees.</li> </ol>	
<b>Objectives:</b>	
The students will be able to...	
<ol style="list-style-type: none"> <li>1. Define decomposition and identify rates that various food and trash items take to decompose in a landfill.</li> <li>2. Demonstrate effective communication skills by properly using the intro, body, and closing that utilizes a professional manner and adheres to strict formatting guidelines.</li> <li>3. Demonstrate a positive work ethic.</li> <li>4. Demonstrate integrity in the workplace.</li> <li>5. Demonstrate effective teamwork</li> </ol>	
<b>Essential Question(s):</b>	
<ol style="list-style-type: none"> <li>1. What impact do humans have on the environment?</li> <li>2. How can a person demonstrate a positive work ethic and integrity?</li> <li>3. How can students demonstrate proper communication techniques through writing?</li> <li>4. How can a student demonstrate time, task, and resource management skills when completing a given task?</li> </ol>	
<b>Materials and Resources:</b>	<b>Key Vocabulary:</b>
Compost pre-test	Decomposition
Timeline Dates	Landfill
Photos of trash items	Recycling
	Incineration
	Composting
<b>Teacher and Student Activities:</b>	
<b>Differentiation:</b>	<ol style="list-style-type: none"> <li>1. Distribute compost pre-test to students and allow them 15 minutes to complete</li> <li>2. Ask students if they know what the word decomposition means. Share the correct definition if students are unable to come up with the correct answer. Divide students into small groups of 3-4 and provide each group with the timeline dates and photos of trash items. Allow students 10 minutes to sort out cards and match up the pictures of trash items to the timeline dates for their rate of decomposition.</li> <li>3. Discuss correct answers as a class.</li> <li>4. List the following words on the board: Landfill, recycling, incineration, and composting. Define and discuss each word with students.</li> <li>5. Ask students to look at the items on their timeline and break them up into each of the four categories based on which disposal method is best for the item. Allow them to have 10 minutes to complete this task. Discuss and correct student answers if necessary. Explain the benefit and importance of recycling or composting trash materials.</li> <li>6. Collect timeline dates and trash pictures from students.</li> <li>7. Distribute copies of compost project based learning prompt. Allow students several minutes to read over prompt and discuss project guidelines with students.</li> </ol>
One on one assistance as needed	
Peer collaboration	
Content adapted as needed	
<b>Assessment:</b>	
Formative assessment:	
compost pre test	
How Long it Take activity	

Name \_\_\_\_\_ Date \_\_\_\_\_ Block \_\_\_\_\_

### Compost Pre-Test

Read through each question below and choose the best possible answer. Record your answer in the space provided. Do not leave any questions blank.

1. What is composting?
2. List five materials that can safely be composted.
3. What is a compost recipe?
4. A) What is pre-consumer waste?  
B) What is post-consumer waste?
5. What precautions should be followed when collecting food scraps?
6. A) What temperature should compost reach in order to kill any harmful bacteria?  
B) How many days should the temperature stay this temperature in order to finish cooking the compost?
7. How often should compost be turned?
8. On average, how much waste can be saved from entering the landfill by composting?
9. What kind of smell should compost have?
10. What can be done to keep animals from being attracted to a compost pile?
11. What can be done with compost once it is finished being made?
12. What are three benefits of composting?
13. What kind of structure should be used for a composting area?



## Introduction to Workplace Readiness Skills

The purpose of this lesson is to determine student attitudes towards workplace readiness skills and establish the importance of being able to demonstrate these skills. Students will be expected to demonstrate the selected workplace readiness skills throughout the rest of the lesson. Once students are able to master the selected workplace readiness skills from the completion of this project based learning activity, the intention is that they will be able to transfer these skills to other situations.

## Introduction to Workplace Readiness Skills

<b>Lesson Plan- Introduction to Workplace Readiness Skills</b>	
<b>Prep Time: 20 minutes</b>	
<b>Length of Lesson: 1 block – 1 hour 30 minutes</b>	
<b>Competencies:</b>	
<ol style="list-style-type: none"> <li>1. WRS 1- Positive Work Ethic: Comes to work every day on time, is willing to take direction, and is motivated to accomplish the task at hand.</li> <li>2. WRS 2 - Integrity: Abides by workplace policies and laws and demonstrates honesty and reliability.</li> <li>3. WRS 3 - Teamwork: Contributes to the success of the team, assists others, and requests help when needed.</li> <li>4. WRS 8 - Speaking and Listening: Follows directions and communicates effectively with customers and fellow employees.</li> <li>5. WRS 9 - Reading and Writing: Reads and interprets workplace documents and writes clearly.</li> <li>6. WRS 15 - Time, Task, and Resource Management: Organizes and implements a productive plan of work.</li> </ol>	
<b>Objectives:</b>	
The students will be able to...	
<ol style="list-style-type: none"> <li>1. Identify seven workplace readiness skills.</li> </ol>	
<b>Essential Question(s):</b>	
<ol style="list-style-type: none"> <li>1. What skills do employers look for in potential employees?</li> <li>2. What personal traits and qualities are associated with demonstrating integrity?</li> <li>3. What personal traits are required to demonstrate effective teamwork?</li> </ol>	
<b>Materials and Resources:</b>	<b>Key Vocabulary:</b>
Workplace readiness skill scenarios Workplace readiness skills pre-survey Poster board Markers	Workplace readiness skills Work ethic Integrity Teamwork Communication
<b>Teacher and Student Activities:</b>	
<b>Differentiation:</b>	
One on one assistance as needed	<ol style="list-style-type: none"> <li>1. Distribute workplace readiness skills pre-survey for students to complete and collect surveys once completed.</li> <li>2. Workplace readiness skills brainstorm and gallery walk. Divide students into groups of 2-3 based on student numbers. Each group will be given 10 minutes to prepare a definition of what they think the skill means and to brainstorm what qualities a person should have for each skill or what a person can do to successfully demonstrate the skill. The instructor should monitor groups while they work.</li> <li>3. Groups will display their posters in a gallery walk to allow all classmates the opportunity to look at each list. Each student will take notes on each poster by writing</li> </ol>
Peer collaboration	
Content adapted as needed	

<p><b>Assessment:</b> Formative assessment: Workplace readiness skills pre-test and scenarios</p>	<p>down the poster title and information listed on the poster. After returning to their seat, students will discuss items written down with a marker and will star each statement they agree with and place an “x” on each statement they disagree with. Students will be provided time to share what statements they agree with versus what they disagree with.</p> <p>4. Divide students into different small groups of 2-3 and give each group a copy of the workplace readiness skills scenarios. Students will need to read through each scenario and must determine what they would do in that situation. After students have had 15 minutes to discuss scenarios, students will share their answers to selected scenarios.</p> <p>5. Groups will then be assigned a workplace readiness skill to create their own scenario. Groups will be provided 15 minutes to create a scenario. Once completed, scenarios will be traded with another group and students will be given the opportunity to read and answer the scenarios.</p> <p>6. Students will be given the employability rubric to look over. The instructor will discuss the rubric with students so they understand how they will be evaluated during the course of the project.</p>
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## Workplace Readiness Skills Pre- Survey

Name \_\_\_\_\_ Date \_\_\_\_\_ Block \_\_\_\_\_

Instructions: Read each statement that relates to workplace readiness skills and indicate your response to the statement by circling your answer.

1. I feel it is important to demonstrate a positive work ethic in my workplace.

Always                      Sometimes                      Never

I chose this response because \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

I can demonstrate this skill by \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

2. I feel it is important to integrity in my workplace.

Always                      Sometimes                      Never

I chose this response because \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

I can demonstrate this skill by \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

3. I feel that it is important to demonstrate teamwork skills in my workplace.

Always                      Sometimes                      Never

I chose this response because \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

I can demonstrate this skill by \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

4. I feel that it is important to demonstrate speaking and listening skills in my workplace.

Always                      Sometimes                      Never

I chose this response because \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

I can demonstrate this skill by \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

5. I feel that it is important to demonstrate reading and writing skills in my workplace.

Always                      Sometimes                      Never

I chose this response because \_\_\_\_\_

\_\_\_\_\_

I can demonstrate this skill by \_\_\_\_\_

\_\_\_\_\_

6. I feel that it is important to demonstrate time, task, and resource management skills in my workplace.

Always                      Sometimes                      Never

I chose this response because \_\_\_\_\_

\_\_\_\_\_

I can demonstrate this skill by \_\_\_\_\_

\_\_\_\_\_

7. I feel that it is important to demonstrate mathematics skills in my workplace.

Always                      Sometimes                      Never

I chose this response because \_\_\_\_\_

\_\_\_\_\_

I can demonstrate this skill by \_\_\_\_\_

\_\_\_\_\_

Name \_\_\_\_\_ Date \_\_\_\_\_ Block \_\_\_\_\_

### **Workplace Readiness Skills Scenarios**

Each of the following scenarios is based on a situation that involves one or more of the workplace readiness skills discussed in class. Your job is to read each scenario, identify which skill(s) need to be improved upon, and to make recommendations for what could be done to solve the situation being described.

#### **Scenario One:**

Your company is required to put on an award ceremony each year to recognize employees for their contributions to the company. This is an annual event and your department relies on you heavily to make sure that the event is successful. After you've delegated tasks, you have one team member who cannot order the invitations because they missed the deadline. Another team member is working on the ceremony schedule and has many of the events out of order and presenters mixed up. Neither employee thinks that it is their fault for the mistakes and keeps blaming the mistakes on other employees. As the coordinator for the award ceremony, how are you going to get your team back on track?

#### **Scenario Two:**

You are the boss of a custom woodworking company. You assigned a small crew of five workers to build custom cabinets for a new client. Your crew receives a set of plans created by your designer with set measurements for each cabinet. While working, some of the measurements were wrong and your crew had to keep starting over. They used an excess of \$500.00 in wasted material and had to spend three extra days working on the project. As the boss, what would you do to fix this problem?

**Scenario Three:**

You are the manager at a grocery store and overhear one of your employees talking with a customer who needed help finding a specialty product. The employee ignored them at first because they were listening to music with their ear buds. When they finally heard the customer, your employee said they had never heard of the product and wished the customer good luck finding the item.

**Scenario Four:**

You have just been assigned the responsibility of being the lead landscape designer for a new strip mall being built. The landscape company sends you to visit the site to determine which materials needed to be purchased. You were running behind for another appointment, but quickly surveyed the site and made your best guess for the materials that would be needed for the project. The area looks similar to a job you had previously, so you list the expenses as the same and move on to your next job site.

**Scenario Five:**

You recently hired a new employee to help out part time around your farm. The person has no previous work experience with the type of work that needs to be done, but you promised to provide them with on the job training. During their first day of training, you teach them the procedure for cleaning out stalls. When it is the new employees turn, all they can do is complain about the smell and how dirty it is. As the boss, how would you handle this situation?

## **Communication Skills**

These activities have been created for a wide range of grade and ability levels. The individual teacher can determine which activity is best suited for students within the classroom. Multiple activities can be used if the instructor wishes to do so. Each activity includes an easy to follow lesson plan, activity, and rubric to evaluate student understanding of the selected skill. Lessons plans have been created for the following activities:

1. Writing a Letter
2. Creating an Informational Brochure
3. Writing a Press Release

## Writing a Letter

<b>Lesson Plan- Writing a Letter</b> <b>Prep Time: 20 minutes</b> <b>Length of Lesson: 1 ½ blocks – 2 hours 15 minutes</b>	
<b>Competencies:</b> <ol style="list-style-type: none"> <li>1. WRS 1- Positive Work Ethic: Comes to work every day on time, is willing to take direction, and is motivated to accomplish the task at hand.</li> <li>2. WRS 2 - Integrity: Abides by workplace policies and laws and demonstrates honesty and reliability.</li> <li>3. WRS 8 - Speaking and Listening: Follows directions and communicates effectively with customers and fellow employees.</li> <li>4. WRS 9 - Reading and Writing: Reads and interprets workplace documents and writes clearly.</li> <li>5. WRS 15 - Time, Task, and Resource Management: Organizes and implements a productive plan of work.</li> </ol>	
<b>Objectives:</b> The students will be able to... <ol style="list-style-type: none"> <li>1. Identify to components of a written letter and incorporate them in a letter inviting a composting expert to serve as a guest speaker in the classroom.</li> <li>2. Demonstrate effective communication skills by properly using the intro, body, and closing that utilizes a professional manner and adheres to strict formatting guidelines.</li> <li>3. Demonstrate a positive work ethic.</li> <li>4. Demonstrate integrity in the workplace.</li> <li>5. Demonstrate effective management of time, tasks, and resources.</li> </ol>	
<b>Essential Question(s):</b> <ol style="list-style-type: none"> <li>1. What impact do humans have on the environment?</li> <li>2. How can a person demonstrate a positive work ethic and integrity?</li> <li>3. How can students demonstrate proper communication techniques through writing?</li> <li>4. How can a student demonstrate time, task, and resource management skills when completing a given task?</li> </ol>	
<b>Materials and Resources:</b> Letter examples Computer access Writing a letter- Project instructions Letter rubric Employability skills rubric **The instructor will need to obtain an example of a professionally written letter versus a poorly written letter	<b>Key Vocabulary:</b> Expert Professional Greeting Body Closing
<b>Teacher and Student Activities:</b>	
<b>Differentiation:</b> One on one assistance as needed  Peer collaboration  Content adapted as needed  <b>Assessment:</b>	<b>Lesson:</b> <ol style="list-style-type: none"> <li>1. Distribute copies of a letter that is out of order, unprofessional, and contains grammar, punctuation, or spelling mistakes.</li> <li>2. Students will be asked to read through the letter. Once they have read through the letter, they will be asked to determine the purpose of the letter, who wrote it, and who the recipient of the letter is. Students will share their answer with their neighbor and will spend a few minutes to justify their answers. Discuss with students the importance of being able to effectively communicate to your audience and how that makes a difference on how you are perceived by your audience.</li> <li>3. Instructor will discuss components of a written letter and students will take</li> </ol>



Written invitation letter	notes for a written record of required elements.
Employability skills	4. Refer to the letter examples previously in the lesson. Students will be provided 15 minutes to work with a partner and create a list of changes and suggestions for improvement. Student answers will be discussed.
Student log sheets	<p>5. Distribute project instructions handout to students and discuss requirements.</p> <p>6. Students will complete the student log sheet and create a plan of work for the day.</p> <p>7. Provide students with independent time to work on determining who to invite to their class as a speaker and to write a rough draft letter.</p> <p>8. Students will work with a partner to read through and peer edit papers using the project rubric. Students will be given time to discuss suggested changes and improvements for records.</p> <p>9. Students will work independently to make suggested changes and improvements for the creation for a final copy.</p> <p>10. Students will use the project rubric to grade their written letter.</p> <p>11. Students will then complete the student log sheet to summarize their productivity for the day, evaluate their effectiveness for the day, and determine which parts of the project will need to be completed for homework.</p>

Name \_\_\_\_\_ Date \_\_\_\_\_ Block \_\_\_\_\_

### **Writing a Letter Instructions**

Your job is to write a letter to a professional that works in a job field related to composting that invites them to be a guest speaker in your classroom. When writing your letter you should be sure to introduce yourself, explain your purpose for writing the letter by providing information about the composting project, times and dates that are available for your speaker to visit, and contact information. Your letter should be properly formatted, detailed, and written in a professional tone.

#### **Objectives:**

1. To identify to components of a written letter and demonstrate their effective use by writing an invitation letter.
2. To write a letter inviting a composting expert to serve as a guest speaker in the classroom.
3. Develop successful work habits by demonstrating workplace readiness skills.

#### **Components:**

- 1) Follows proper formatting
  - a) 12 point font
  - b) 1 inch margins
  - c) Uses one of the following fonts: Times New Roman, Arial, or Cambria
- 2) Proper spacing between content
- 3) Professional tone
- 4) Address for sender and recipient
- 5) Date
- 6) Appropriate greeting, body and closing
- 7) Signature of sender and typed name
- 8) Proper grammar, punctuation, and spelling

## **Letter Rubric:**

<b>Criteria</b>	<b>5 Excellent</b>	<b>4 Above Average</b>	<b>3 Satisfactory</b>	<b>2 Needs Improvement</b>	<b>1 Unsatisfactory</b>	<b>Self- Assessment</b>	<b>Teacher Assessment</b>
Format	All formatting elements have been included and used properly	One formatting element is missing	Two formatting elements are missing	Three or more formatting elements are missing	Four or Formatting elements are missing	/	/
Content- Introduction	Proper greeting- Shares student info and purpose of letter in great detail.	Proper greeting- Shares student identity and purpose of letter in detail.	Proper greeting- Provides student identity and purpose of letter.	Includes greeting- missing student identity and/or purpose of letter	Includes greeting- missing student identity and/or purpose of letter	/	/
Content- Body	Detailed purpose of program and requests 5 pieces of information to be shared.	Outlines program goals and provides request for 4 pieces of information to be shared.	Outlines program goals and provides request for 3 pieces of information to be shared.	Provides basic details on program and only requests 2 pieces of information to be shared.	Provides minimal details on program and requests less than 2 pieces of information to be shared.	/	/
Content- Closing	Includes contact information, timeframe to contact, follow up plan and proper closing	Missing one required element	Missing two of the required elements	Missing three of the required elements	Missing four or more of the required elements	/	/
Professional Tone	Highly professional tone is used throughout	Professional tone is used throughout	Fairly professional tone is used throughout	Professional tone is used intermittently with conversational tone	Uses “text talk” and/ or conversational tone throughout	/	/
Grammar	Free of spelling, grammar, or punctuation	1 spelling, grammar or punctuation error	2 spelling, grammar, or punctuation errors	3 spelling, grammar, or punctuation errors	5 or more spelling, grammar or punctuation errors	/	/

## **General Comments:**

## Creating an Informational Brochure

<b>Lesson Plan - Informational Brochure</b> <b>Prep Time: 20 minutes</b> <b>Length of Lesson: 2 blocks – 3 hours</b>	
<b>Competencies:</b> <ol style="list-style-type: none"> <li>1. WRS 1- Positive Work Ethic: Comes to work every day on time, is willing to take direction, and is motivated to accomplish the task at hand.</li> <li>2. WRS 2 - Integrity: Abides by workplace policies and laws and demonstrates honesty and reliability.</li> <li>3. WRS 8 - Speaking and Listening: Follows directions and communicates effectively with customers and fellow employees.</li> <li>4. WRS 9 - Reading and Writing: Reads and interprets workplace documents and writes clearly.</li> <li>5. WRS 15 - Time, Task, and Resource Management: Organizes and implements a productive plan of work.</li> </ol>	
<b>Objectives:</b> The students will be able to... <ol style="list-style-type: none"> <li>1. Identify the components of an informational brochure.</li> <li>2. Create an informational brochure that addresses benefits of composting, addresses acceptable compostable materials and collection procedures for the compost program</li> <li>3. Demonstrate effective communication methods to advertise the benefits of composting, address acceptable composting materials and explain the collection process with the school community.</li> <li>4. Demonstrate a positive a work ethic.</li> <li>5. Demonstrate integrity in the workplace.</li> <li>6. Demonstrate effective management of time, tasks, and resources when given a specific project to complete.</li> </ol>	
<b>Essential Question(s):</b> <ol style="list-style-type: none"> <li>1. What impact do humans have on the environment?</li> <li>2. How can a person demonstrate a positive work ethic, integrity, and leadership skills?</li> <li>3. What components are essential to the creation of an informational brochure?</li> <li>4. How can students demonstrate proper communication techniques through writing?</li> <li>5. How can a student demonstrate time, task, and resource management skills when completing a given task?</li> </ol>	
<b>Materials and Resources:</b> Examples of brochures Computer access Brochure project instructions Brochure rubric Employability rubric Student log sheets **The instructor will need to obtain an example of brochures	<b>Key Vocabulary:</b> Information Brochure
<b>Teacher and Student Activities:</b>	
<b>Differentiation:</b>  One on one assistance as needed  Peer collaboration  Content adapted as needed  <b>Assessment:</b>	<b>Lesson:</b> <ol style="list-style-type: none"> <li>1. The instructor will distribute examples if different brochures to students. Each student will be given a total of 5 minutes to look over their brochures and create a list of positive and negative aspects for each brochure.</li> <li>2. Students will be given 10 minutes to pair up with an assigned partner to review brochures and discuss items from each partner’s list.</li> <li>3. As a class, students will create one list for positive characteristics and one list for negative characteristics.</li> <li>4. Instructor will discuss components of an informational brochure and students will take notes for a written record of required elements.</li> <li>5. Share portions of a brochure with the class and allow students to work in partnerships to analyze the brochure. Students will discuss which parts of the</li> </ol>

<p>Informational brochure Employability skills Student log sheets</p>	<p>brochure are good examples of required elements and will make suggestions for improvement on brochure sections that are not good examples.</p> <p>6. Independent practice - Students will work individually to create a rough draft of their informational brochure.</p> <p>7. Peer Edit- Students will trade brochures with a partner. Each partner will use the brochure rubric to grade their partner's brochure. Students will then discuss their scores, comments, and suggestions with their partner.</p> <p>8. Independent practice- Students will work individually to create a final draft of their brochure. Brochures can be created using a computer or be handwritten and drawn. Students will self-assess their work once completed using a brochure grading rubric.</p> <p><b>Modifications:</b></p> <ol style="list-style-type: none"><li>1. Create brochures using a chromebook or computer</li><li>2. Create a one page display that can be hung up in the hallway</li><li>3. Provide students with a template or use of a computer program such as Microsoft Publisher that allows students to input information and pictures into the document</li></ol>
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Name \_\_\_\_\_ Date \_\_\_\_\_ Block \_\_\_\_\_

### **Informational Brochure Instructions**

An easy way to share information with a large audience is through a brochure. Your job is to create an informational brochure that explains what composting is and highlights the school composting program.

#### **Objectives:**

1. To identify the components of and create an informational brochure to effectively communicate with the school staff and student body to advertise the benefits of composting, address acceptable composting materials and explain the collection process.
2. Create an informational brochure that highlights benefits of composting, addresses acceptable compostable materials and collection procedures for the compost program.
3. Develop successful work habits by demonstrating workplace readiness skills.

#### **Components:**

1. Cover page with title and student name
2. Page that outlines what composting is
3. Page that outlines four benefits of composting
4. Page that outlines what items are collected and what items will not be collected
5. Page that outlines the compost collection process
6. Reference page that includes four properly cited sources
7. A minimum of one picture should be used for each page
8. Information should be properly labeled with headlines

**Informational Brochure Rubric:**

Category	5 Excellent	4 Above Average	3 Satisfactory	2 Needs Improvement	1 Unsatisfactory	Self- Assessment	Teacher Assessment
Organization	The brochure has exceptionally attractive formatting and well-organized information.	The brochure has attractive formatting and well organized information.	The brochure has well organized information, but formatting could be more attractive.	The formatting and organization of material are confusing to the reader.	Information is missing from categories and is unorganized. Formatting needs improvement.	/	/
Ideas	The brochure has all of the required information and some additional information	The brochure has all of the required information	The brochure is missing one of the required elements.	The brochure is missing two of the required elements.	The brochure is missing 3 or more required elements.	/	/
Writing Mechanics	Free of spelling, grammar and punctuation mistakes	1 spelling, grammar or punctuation mistakes	2-3 spelling, grammar, or punctuation mistakes	4-5 spelling, grammar, or punctuation mistakes	6 or more spelling, grammar or punctuation mistakes	/	/
Graphics/ Pictures	Excellent use of graphics – all relate to text	Graphics go well with the text	Graphics go well with the text, but there aren't enough	Some of the graphics go with the text	The graphics do not go with the accompanying text	/	/
Sources	Four or more sources have been used and are accurately cited	Three sources have been used and are cited accurately or has one mistake in the citation	Two sources have been used and are cited accurately or has two mistakes in the citation	One source has been used and is cited accurately or has three mistakes in the citation	One source has been used and is cited accurately or has four or more mistakes	/	/

**General Comments:**

## Writing a Press Release

<b>Lesson Plan- Writing a Press Release</b>	
<b>Prep Time: 20 minutes</b>	
<b>Length of Lesson: 1 ½ blocks – 2 hours 15 minutes</b>	
<b>Competencies:</b>	
<ol style="list-style-type: none"> <li>1. WRS 1- Positive Work Ethic: Comes to work every day on time, is willing to take direction, and is motivated to accomplish the task at hand.</li> <li>2. WRS 2 - Integrity: Abides by workplace policies and laws and demonstrates honesty and reliability.</li> <li>3. WRS 3 - Teamwork: Contributes to the success of the team, assists others, and requests help when needed.</li> <li>4. WRS 8 - Speaking and Listening: Follows directions and communicates effectively with customers and fellow employees.</li> <li>5. WRS 9 - Reading and Writing: Reads and interprets workplace documents and writes clearly.</li> <li>6. WRS 15 - Time, Task, and Resource Management: Organizes and implements a productive plan of work.</li> </ol>	
<b>Objectives:</b>	
The students will be able to...	
<ol style="list-style-type: none"> <li>1. Identify the components of a press release.</li> <li>2. Create a press release that addresses benefits of composting, addresses acceptable compostable materials and collection procedures for the compost program</li> <li>3. Demonstrate effective communication methods to advertise the benefits of composting, address acceptable composting materials and explain the collection process with the school community.</li> <li>4. Demonstrate a positive a work ethic.</li> <li>5. Demonstrate integrity in the workplace.</li> <li>6. Demonstrate effective management of time, tasks, and resources when given a specific project to complete.</li> </ol>	
<b>Essential Question(s):</b>	
<ol style="list-style-type: none"> <li>1. What impact do humans have on the environment?</li> <li>2. How can a person demonstrate a positive work ethic, integrity, and leadership skills?</li> <li>3. What components are essential to the creation of a successful informational brochure?</li> <li>4. How can students demonstrate proper communication techniques through writing?</li> <li>5. How can a student demonstrate time, task, and resource management skills when completing a given task?</li> </ol>	
<b>Materials and Resources:</b> Examples of press releases Computer access Press release instructions Press release rubric Employability rubric Student log sheets	<b>Key Vocabulary:</b> Press release Inverted pyramid
<b>Teacher and Student Activities:</b>	
<b>Differentiation:</b> One on one assistance as needed  Peer collaboration  Content adapted as needed	<b>Lesson:</b> <ol style="list-style-type: none"> <li>1. The instructor will show two different press releases on the board. Students will be given 5 minutes to read and analyze each press release to determine which one they think is the best. Students will be given two minutes to share and discuss their answer with a peer. The class will then spend five minutes discussing group answers and reasoning.</li> <li>2. Students will be given 10 minutes to pair up with an assigned partner to review brochures and discuss items from each partner’s list.</li> <li>3. As a class, students will create one list for positive characteristics and one list for negative characteristics.</li> <li>4. Instructor will discuss what a press release is and the required components of a press</li> </ol>



<p><b>Assessment:</b> Press Release Employability Skills Rubric</p> <p>Student log sheets</p>	<p>release. Students should take individual notes.</p> <p>5. Students will be shown another example of a press release and will be asked to critique it on the required press release elements.</p> <p>6. Independent practice - Students will work individually to create a press release.</p> <p>7. Peer Edit- Students will press releases with a partner. Each partner will use the press release rubric to grade their partner's assignment. Students will then discuss their scores, comments, and suggestions with their partner.</p> <p>8. Independent practice- Students will work individually to create a final draft of their press element. Students will self-assess their work using a press release grading rubric and their work habits using the employability rubric.</p> <p><b>Modifications:</b></p> <ol style="list-style-type: none"> <li>1. Provide students with a template to use</li> </ol> <p><b>Extensions:</b></p> <ol style="list-style-type: none"> <li>1. Plan a ribbon cutting ceremony and invite the press to attend. Prepare an additional press release to advertise the activity.</li> </ol>
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Name \_\_\_\_\_ Date \_\_\_\_\_ Block \_\_\_\_\_

### **Press Release Instructions**

One way to properly advertise an activity or event is to use a press release. It allows different media outlets the opportunity to attend an event and then inform the public about what you are doing. You are to write a press release that would either advertise the announcement of a compost program starting, the groundbreaking for the compost bin construction, or the first day of compost collection. Your press release should include the required components and follow the proper format.

#### **Objectives:**

1. To identify the components of and create a press release to effectively communicate with the public to advertise an official ribbon cutting ceremony for the start of our school composting program.
2. To inform the public of the positive aspects of the school composting project, who is involved, why the program was started and what impact it will have on both the school and community.

#### **Required Components:**

To receive full credit on your assignment it is important that you include each one of the elements listed below in your press release. Be sure that you check the project rubric for specific guidelines.

1. **Headline-** Basic description of the event/story to share
2. **Sub Headline-** Provides further detail on the event/story
3. **Dateline-** Name of city where event is happening and the date
4. **Main Content-** Share the 5 W's of the event/story with the most important details shared at the beginning and working down to the small details
5. **Organization Information-** Provides link to internet website for further information
6. **Ending-** Indicate the end of the release by including #####
7. **Additional Information-** Includes the name of the person organizing the event and contact information
8. **Proper grammar, spelling, and punctuation**

**Press Release Rubric:**

Category	5 Excellent	4 Above Average	3 Satisfactory	2 Needs Improvement	1 Unsatisfactory	Self- Assessment	Teacher Assessment
<b>Information</b>	5 W's are highly detailed  Key elements are included  Quotes used strongly support the story.	5 W's are easily identified  Key elements are detailed.  Quotes support the story.	5 W's can be identified  Key elements need more detail  Quotes are sufficient	Some of the 5 W's are missing  Some key elements or quotes are missing or weak	Does not include all 5 W's. Key information and quotes are missing.	/	/
<b>Organization</b>	Information is highly organized using the inverted pyramid.	Information is organized using inverted pyramid. One piece of unnecessary information is included.	Information is organized using the inverted pyramid. Two pieces of unnecessary information are included.	Information is fairly organized using the inverted pyramid. Three pieces of unnecessary information are included.	Information is not organized using the inverted pyramid. Three or more pieces of information are out of order.	/	/
<b>Format</b>	Contains all essential components.	Missing 1 component	Missing 2 components	Missing 3 components	Missing 4 or more components	/	/
<b>Use of Facts &amp; Statistics</b>	Purpose of project is well supported with five facts, statistics and/or examples.	Purpose of project is well supported with four facts, statistics and/or examples.	Purpose of project is adequately supported with three facts, statistics and/or examples.	Purpose of project is not well supported and only has two facts, statistics and/or examples.	Purpose of project is only supported with one fact, statistics or example.	/	/
<b>Writing Mechanics</b>	Free of spelling, punctuation and grammar errors.	1 spelling, punctuation, or grammar error present.	2 spelling, punctuation, or grammar errors present.	3 spelling, punctuation, or grammar errors present.	4 or more spelling, punctuation, or grammar errors present.	/	/

**General Comments:**

## **Job Specific Math Skills**

These activities have been created to accommodate a wide range of grade and ability levels. Activities promote the importance of record keeping and require students to complete job related math skills. The individual teacher can determine which activity is best suited for students within the classroom. Multiple activities can be used if the instructor wishes to do so. Each activity includes an easy to follow lesson plan, activity, and rubric to evaluate student understanding of the selected skill. Lessons plans have been created for the following activities:

1. Data Collection
2. Compost Plan Design
3. Bill of Materials
4. Creating a Budget

## Data Collection Charts

<b>Lesson Plan - Data Collection Charts</b>	
<b>Prep Time: 20 minutes</b>	
<b>Length of Lesson: 1 block – 1 hour 30 minutes</b>	
<p><b>Competencies:</b></p> <ol style="list-style-type: none"> <li>1. WRS 1- Positive Work Ethic: Comes to work every day on time, is willing to take direction, and is motivated to accomplish the task at hand.</li> <li>2. WRS 2 - Integrity: Abides by workplace policies and laws and demonstrates honesty and reliability.</li> <li>3. WRS 3 - Teamwork: Contributes to the success of the team, assists others, and requests help when needed.</li> <li>4. WRS 15 - Time, Task, and Resource Management: Organizes and implements a productive plan of work.</li> <li>5. WRS 16 - Mathematics: Use mathematical reasoning to accomplish tasks.</li> </ol> <p><b>Objectives</b> The students will be able to...</p> <ol style="list-style-type: none"> <li>1. Determine which data is necessary to collect when maintaining records on a school composting program.</li> <li>2. Create a data collection chart that allows for easy and accurate record keeping of composting information and calculations of waste collected in comparison to the amount of compost created.</li> <li>3. Demonstrate a positive work ethic.</li> <li>4. Demonstrate integrity.</li> <li>5. Demonstrate mathematical reasoning to accomplish tasks.</li> <li>6. Demonstrate teamwork.</li> <li>7. Demonstrate effective communication skills.</li> <li>8. Demonstrate proper management of time, tasks, and resources when given a project to complete.</li> </ol>	
<p><b>Essential Question(s):</b></p> <ol style="list-style-type: none"> <li>1. What impact do humans have on the environment?</li> <li>2. How can a person demonstrate a positive work ethic, integrity, and teamwork skills?</li> <li>3. What components are required in professional letter?</li> <li>4. How can students demonstrate proper communication techniques verbally and through writing?</li> <li>5. How can a student demonstrate time, task, and resource management skills?</li> </ol>	
<p><b>Materials and Resources:</b> Examples of data tables Project instructions Data table rubric Computer access Employability skills rubric Student log sheets</p>	<p><b>Key Vocabulary:</b> Data Table</p>
<b>Teacher and Student Activities:</b>	
<p><b>Differentiation:</b> One on one assistance as needed  Peer collaboration  Content adapted as needed  <b>Assessment:</b> Data table Employability</p>	<p><b>Before Lesson:</b></p> <ol style="list-style-type: none"> <li>1. Students will be presented with a group of data and be asked three different questions about the information. Students will be given limited time to answer the questions (2-3 minutes). Once time is up, ask students if they were able to answer all of the questions, how easy it was to find the information, and what could be done to make the information easier to find.</li> <li>2. Instructor will discuss components of a data table and students will take notes for a written record of required elements.</li> <li>3. Students will be shown different examples of data tables and will be given an opportunity to evaluate each data table in small groups.</li> <li>4. Distribute project instructions and student log sheets. Discuss project requirements and answer any questions. Students will complete student log sheets to outline a plan of work for the day.</li> <li>5. Students will be paired up and given the opportunity to work collaboratively to prepare a</li> </ol>

<p>skills Student log sheets</p>	<p>data chart.</p> <p>6. Groups will trade their completed data charts with one another and evaluate them using the data table rubric. Groups will meet to discuss their evaluation and suggestions for improvement.</p> <p>7. Groups will then work on their own to make suggested changes and complete a final draft of their data tables. Each group will evaluate their data table using the rubric and will then complete student logs to summarize work progress for the day.</p> <p><b>Modifications:</b></p> <ol style="list-style-type: none"> <li>1. Provide students with options of information to record data on, allow them to discuss in small groups, and then determine which pieces of information should be included in the data chart</li> </ol> <p><b>Extensions:</b></p> <ol style="list-style-type: none"> <li>1. Provide the math department with collected data to evaluate in class</li> </ol>
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Name \_\_\_\_\_ Date \_\_\_\_\_ Block \_\_\_\_\_

### **Creating a Data Collection Table**

In order to determine the success of the compost program, you will be required to collect data throughout the year. Your job is to determine what information should be included in daily, weekly, and monthly data collection. Once you determine what information should be collected, you must also determine how this information will be used to determine the success of the program. This will involve you determining basic math calculations that students assisting in the program will need to complete for results analysis.

#### **Objectives:**

1. To determine which data is necessary to collect when maintaining records on a school composting program.
2. To create a data collection chart that allows for easy and accurate record keeping of composting information.
3. Develop successful work habits by demonstrating workplace readiness skills.

#### **Instructions:**

1. Working in your assigned groups, brainstorm a list of data that you think would be necessary to keep information on while running a school composting program. You should focus on data that indicates how successful the program is at reducing the school's environmental impact and indicates if the collected materials are successfully being converted into a safe and usable compost material.
2. Using the list of data you feel is necessary to maintain, create a table(s) that will allow for weekly, monthly, and yearly data collection. Refer to the attached rubric to ensure all requirements have been met to earn maximum points.

## Data Collection Rubric

Category	5 Excellent	4 Above Average	3 Satisfactory	2 Needs Improvement	1 Unsatisfactory	Self- Assessment	Student Assessment
Organization	Chart is very neat, easy to follow and correctly labeled	Chart is neat, organized, and labeled	Chart is fairly organized, and all categories have a label	Several pieces of information are hard to find or read	Information is unorganized and difficult to find	/	/
Categories	Contains at least 7 relevant data categories	Includes at least 6 relevant data categories	Includes at least 5 relevant data categories	Includes at least 4 relevant data categories	Includes at least 3 relevant data categories	/	/
Collection Periods	Includes daily, weekly, monthly, and yearly collection periods	Missing collection periods for at least one category	Missing collection periods for at least two categories	Missing collection periods for at least three categories	Missing collection periods for all categories	/	/
Collection Totals	Includes a total or average box for each category	Missing at least one total or average box for a category	Missing at least two total or average boxes for a category	Missing at least three total or average boxes for a category	Missing at least four total or average boxes for a category	/	/
Grammar, Punctuation, & Mechanics	Free of spelling, grammar and punctuation mistakes	1 spelling, grammar or punctuation mistake	2 spelling, grammar, or punctuation mistakes	3 spelling, grammar, or punctuation mistakes	4 or more spelling, grammar or punctuation mistakes	/	/

### General Comments:



## Compost Plan Drawings

<b>Lesson Plan - Compost Plan Drawings</b> <b>Prep Time: 20 minutes</b> <b>Length of Lesson: 3 blocks: 4 hours 30 minutes</b>	
<b>Competencies:</b> <ol style="list-style-type: none"> <li>1. WRS 1- Positive Work Ethic: Comes to work every day on time, is willing to take direction, and is motivated to accomplish the task at hand.</li> <li>2. WRS 2 - Integrity: Abides by workplace policies and laws and demonstrates honesty and reliability.</li> <li>3. WRS 3 - Teamwork: Contributes to the success of the team, assists others, and requests help when needed.</li> <li>4. WRS 8 - Speaking and Listening: Follows directions and communicates effectively with customers and fellow employees.</li> <li>5. WRS 9 - Reading and Writing: Reads and interprets workplace documents and writes clearly.</li> <li>6. WRS 15 - Time, Task, and Resource Management: Organizes and implements a productive plan of work</li> </ol>	
<b>Objectives:</b> The students will be able to... <ol style="list-style-type: none"> <li>1. Create a scale drawing of a compost system that is able to process 750 cubic feet of compostable materials.</li> <li>2. Create a detailed set of instructions for constructing the compost system.</li> </ol>	
<b>Essential Question(s):</b> <ol style="list-style-type: none"> <li>1. What impact do humans have on the environment?</li> <li>2. How can a person demonstrate a positive work ethic, integrity, and teamwork skills?</li> <li>3. What components are required in professional letter?</li> <li>4. How can students demonstrate proper communication techniques verbally and through writing?</li> <li>5. How can a student demonstrate time, task, and resource management skills?</li> </ol>	
<b>Materials and Resources:</b> Examples of plan drawings Computer access Project instructions Compost plan drawing rubric Graph paper, rulers, and erasers Employability skills rubric Student log sheets  *The instructor will need to find a set of project plans and prepare several measurements that can be converted using an assigned scale	<b>Key Vocabulary:</b> Scale Cubic Feet
<b>Teacher and Student Activities:</b>	
<b>Differentiation:</b> One on one assistance as needed  Peer collaboration  Content adapted as needed  <b>Assessment:</b> Compost plan drawings Employability skills Student log sheets	<b>Lesson:</b> <ol style="list-style-type: none"> <li>1. Show a set of project plans on the board that are lacking in measurements, messy and have limited instructions. Ask students if they think they would be able to build the project and to explain their answer. Allow several students to share and discuss their answers with the class.</li> <li>2. Show students a second plan that is detailed, neat, and contains detailed instructions. Ask students if they think they would be able to build this project and explain their answer. Allow several students to share and discuss their answers with the class.</li> <li>3. Allow students five minutes to compare and contrast each set of project plans based on neatness, ease of replicating project, and labeling.</li> <li>4. Instructor will discuss components of a set of project plan drawings and</li> </ol>

students will take notes for a written record of required elements.

5. Instructor will discuss scale with students and provide several practice activities for students to complete.
6. Instructor will discuss how to calculate volume with students and provide them with several sample activities.
7. Distribute compost plan project instructions and discuss with students. Allow students the opportunity to ask any questions.
8. Distribute student log sheets and allow students the opportunity to complete log sheets with an organized plan of work.
9. Students will research compost bin designs and prepare a pro/con list for a minimum of four different designs.
10. Students will gather all necessary materials and begin creating a rough draft drawing for a compost bin facility. Project dimensions must be able to support 750 cubic feet of material. While working, students should check off project components from their instruction sheet to ensure maximum points will be earned.
11. Rough draft drawings will be traded with a classmate and students will take turns evaluating student project plans with grading rubrics. Students will pair up with their evaluator and will discuss project evaluation.
12. Students will work independently to create a final draft of their compost plan drawings making changes from their first design if necessary. Once completed, students will evaluate their work using the project grading rubric. Students will then complete their student log sheet to evaluate progress made during the class period and steps for completion of the activity.

\*\*Students can work in groups of two when designing compost structures if the teacher wishes. Once a design has been agreed upon, students would then need to each draw their own final draft of the project.

**Modifications:**

1. Use computer software design programs to complete drawings if available
2. Research different pre-constructed bin designs and select one to create scale drawings of if a shop area and tools are not available

**Extensions:**

1. Present student designs to an engineer/construction manager and allow each group to receive proper feedback on their design. Have guests select best design for students to construct.

Name \_\_\_\_\_ Date \_\_\_\_\_ Block \_\_\_\_\_

### **Compost Plan Drawing Instructions**

In order to have a successful composting program, you will need to create a successful compost bin. The first step in doing this is to design a compost bin that will be able to process 750 cubic feet of compostable materials. You will need to research bin designs and determine the best features of each so you are able to create your own design. Your plans should be neat, drawn to scale, detailed, and include a set of easy to follow instructions that would allow people of all skill levels to follow your plans.

#### **Objectives:**

1. Create a scale drawing of a compost system that is able to process 750 cubic feet of compostable materials.
2. Create a detailed set of instructions for constructing the compost system.
3. Develop successful work habits by demonstrating workplace readiness skills.

#### **Instructions:**

1. Determine an appropriate scale to use for your sketch and label.
2. Create a rough sketch design for a compost system that can hold up to 750 cubic feet of compostable material and has an aesthetically pleasing design
3. Use a pencil and graph paper when creating your designs.
4. Label your final design with a scale, drawing name, and measurements for each part.
5. Create a detailed list of instructions that include site preparation, project layout, preparation and construction.

**Compost Plan Drawing Rubric:**

Skill	5 Excellent	4 Above Average	3 Satisfactory	2 Needs Improvement	1 Unsatisfactory	Self- Assessment	Teacher Assessment
Drawing is labeled and neat	Ruler was used and all errors corrected. Extremely neat in appearance with attention to detail.	Ruler was used and most errors corrected. Dimensions and labels are present, neat, and accurate	Most lines are ruler drawn and most errors have been corrected. Dimensions and labels are present.	Many lines are not ruler drawn or neat. Dimensions and labels are missing and/or incorrect.	A majority of lines, corrections, , and/or features are not present and/or neatly done.	/	/
Detailed Plans	All materials and construction methods are highly detailed and can be easily replicated by anyone.	All materials and construction methods can be easily replicated	Most materials and construction methods are detailed and can be easily replicated	Some materials and construction methods are detailed and can be easily replicated.	Little to no materials and construction methods are detailed or can be easily replicated.	/	/
Written Communication	Project instructions are step by step, highly detailed and easy to follow.	Project instructions are step by step, detailed and easy to follow.	Project instructions are step by step, fairly detailed, and can be followed.	Project instructions include steps but are limited on details and are somewhat easy to follow.	Project instructions are missing steps, lack details, and are not easy to follow.	/	/
Job Specific Math Skills	Plan is drawn to scale with proportions within 1/16" accuracy. Dimensions chosen will process 750 cubic feet or more of compost.	Plan is drawn to scale with proportions within 1/16" and 1/8 accuracy. Dimensions chosen will support 750 cubic feet of compost.	Plan is drawn to scale with proportions within 1/8" accuracy. Dimensions chosen will process 750 cubic feet of compost within a 10 foot +/- range.	Scale dimension drawing is off in a few places by 1/4" or more and/or selected measurements will not support 750 cubic feet of compost.	Drawing is not to scale and dimensions will not support 750 cubic feet of compost.	/	/

**General Comments:**

## Compost Bin Bill of Materials

<b>Lesson Plan- Bill of Materials</b> <b>Prep Time: 20 minutes</b> <b>Length of Lesson: 1 ½ blocks – 2 hours 15 minutes</b>	
<b>Competencies:</b> <ol style="list-style-type: none"> <li>1. WRS 1- Positive Work Ethic: Comes to work every day on time, is willing to take direction, and is motivated to accomplish the task at hand.</li> <li>2. WRS 2 - Integrity: Abides by workplace policies and laws and demonstrates honesty and reliability.</li> <li>3. WRS 3 - Teamwork: Contributes to the success of the team, assists others, and requests help when needed.</li> <li>4. WRS 8 - Speaking and Listening: Follows directions and communicates effectively with customers and fellow employees.</li> <li>5. WRS 9 - Reading and Writing: Reads and interprets workplace documents and writes clearly.</li> <li>6. WRS 15 - Time, Task, and Resource Management: Organizes and implements a productive plan of work.</li> <li>7. WRS 16 - Mathematics: Use mathematical reasoning to accomplish tasks.</li> </ol>	
<b>Objectives:</b> The students will be able to... <ol style="list-style-type: none"> <li>1. Identify components in a bill of materials.</li> <li>2. Create a list of project supplies to construct a compost bin area.</li> <li>3. Demonstrate mathematical reasoning skills by calculating a bill of materials.</li> <li>4. Demonstrate a positive work ethic.</li> <li>5. Demonstrate integrity.</li> <li>6. Demonstrate teamwork skills.</li> <li>7. Demonstrate the proper management of time, tasks, and resources.</li> </ol>	
<b>Essential Question(s):</b> <ol style="list-style-type: none"> <li>1. How can a person demonstrate a positive work ethic, integrity, and teamwork skills?</li> <li>2. What components are included in a bill of materials?</li> <li>3. How is a bill of materials calculated?</li> <li>4. How can students demonstrate mathematical reasoning skills to solve a problem?</li> <li>5. How can a student demonstrate time, task, and resource management skills?</li> </ol>	
<b>Materials and Resources:</b> Project plan example Bill of materials sheet Student compost plan drawings Calculator Employability skills rubric Student log sheets	<b>Key Vocabulary:</b> Bill of materials Unit Cost Total cost
<b>Teacher and Student Activities:</b>	
<b>Differentiation:</b> One on one assistance as needed  Content adapted as needed	<b>Lesson:</b> <ol style="list-style-type: none"> <li>1. Provide students an image of a woodworking project and ask them to determine how much they think the project costs. Give students three minutes to come up with their estimate and have them be prepared to share how they calculated that number.</li> <li>2. Discuss components of a bill of materials while students take notes on the given material.</li> <li>3. Discuss board foot calculations and have students take notes on each</li> </ol>

<p><b>Assessment:</b> Completed bill of materials Employability rubric</p>	<p>calculation. Students will complete several board feet calculations.</p> <p>4. Bill of materials practice set- students will be given a bill of materials sheet and a set of project instructions. Students will work in a partnership to complete the bill of materials practice set.</p> <p>5. Distribute bill of materials instructions. Discuss project instructions and allow students the opportunity to ask questions.</p> <p>6. Distribute student log sheets and allow students the opportunity to fill them out.</p> <p>7. Students will then work independently to calculate a bill of materials based on their compost bin storage designs.</p> <p>Modifications:</p> <ol style="list-style-type: none"> <li>1. If students designed plans in partnerships they can work together on this assignment.</li> <li>2. Students can trade completed their completed bill of materials with a classmate to have them check their work. Any discrepancies can be discussed between the partners.</li> </ol>
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## Bill of Materials

### Definitions

#### Bill of Materials:

A list of materials needed for a project and a description of the Materials.

#### Item(s):

Each part of the project.  
Example: Side, bottom, paint, nails, etc.

#### Round Up:

To round to the next highest number → just like in math.  
Example: 6.5 would round up to 7

#### Board Foot:

The amount of wood equal to a board that is 1 inch thick; 1 foot wide; 1 foot long. This is the standard measurement used to calculate the amount of wood needed for projects.

### Components of a Bill of Materials

- |                      |                         |
|----------------------|-------------------------|
| 1. Item or part name | 5. Description of items |
| 2. Number of pieces  | 6. Total board feet     |
| 3. Type of Material  | 7. Unit cost            |
| 4. Size of pieces    | 8. Total cost           |

Name \_\_\_\_\_ Date \_\_\_\_\_ Block \_\_\_\_\_

**Bill of Materials Activity**

When preparing to build a project, a key step is determining the amount of materials your need to purchase and the total cost. This ensures that you purchase the correct amount of material and can properly budget the right amount of money for the project. You will prepare a bill of materials based on the compost bin design you created.

**Objectives:**

1. To create a list of project supplies to construct a compost bin area and calculate a bill of materials.
2. Develop successful work habits by demonstrating workplace readiness skills.

**Instructions:**

Use your compost bin design to create a bill of materials. Be sure to include the following requested information:

1. Project Name
2. Item/part name
3. Number of pieces
4. Type of material
5. Material size
6. Description of part
7. Total board feet
8. Unit cost
9. Total cost

**Bill of Materials**

Project Name: \_\_\_\_\_

Item	Number of Pieces	Type of Material	Size	Description	Total Feet	Unit Cost	Total Cost

Total number of pieces \_\_\_\_\_  
 Total cost \_\_\_\_\_



## Creating a Budget

<b>Lesson Plan: Creating a Budget</b> <b>Prep-Time: 20 minutes</b> <b>Length of Lesson: 2 blocks – 3 hours</b>	
<b>Competencies:</b> <ol style="list-style-type: none"> <li>1. WRS 1 - Positive Work Ethic: Comes to work every day on time, is willing to take direction, and is motivated to accomplish the task at hand.</li> <li>2. WRS 2 - Integrity: Abides by workplace policies and laws and demonstrates honesty and reliability.</li> <li>3. WRS 3 - Teamwork: Contributes to the success of the team, assists others, and requests help when needed.</li> <li>4. WRS 15 - Time, Task, and Resource Management: Organizes and implements a productive plan of work.</li> <li>5. WRS 16 - Mathematics: Use mathematical reasoning to accomplish tasks.</li> </ol>	
<b>Objectives:</b> The students will be able to... <ol style="list-style-type: none"> <li>1. Identify components of a bill of materials and explain their importance.</li> <li>2. Develop a \$750.00 yearly operating budget that includes the initial start-up and maintenance of a school compost project</li> <li>3. Demonstrate mathematical reasoning skills by creating a \$750.00 one year operating budget for a compost program.</li> <li>4. Demonstrate a positive work ethic.</li> <li>5. Demonstrate integrity.</li> <li>6. Demonstrate teamwork skills.</li> <li>7. Demonstrate the proper management of time, tasks, and resources.</li> </ol>	
<b>Essential Question(s):</b> <ol style="list-style-type: none"> <li>1. How can a person demonstrate a positive work ethic, integrity, and teamwork skills?</li> <li>2. What components are included in a budget?</li> <li>3. What factors are taken into consideration when developing a budget?</li> <li>4. How can students demonstrate mathematical reasoning skills to solve a problem?</li> <li>5. How can a student demonstrate time, task, and resource management skills when given an assigned project?</li> </ol>	
<b>Materials and Resources:</b> Budget project sheet Budget rubric Calculators Supply catalogs and/or computer access Employability rubric Student log sheets	<b>Key Vocabulary:</b> Budget Prioritize Vendor
<b>Teacher and Student Activities:</b>	
<b>Differentiation:</b> One on one assistance as needed  Peer collaboration  Content adapted as needed	<b>Lesson:</b> <ol style="list-style-type: none"> <li>1. Students will be paired up and asked to make a list of expenses they would have each month based on bills, food expenses, shopping, and entertainment expenses. Students will then be told that they only have \$2,000 dollars per month to cover all expenses and will need to prioritize expenses. After providing groups five minutes to determine priorities, groups will be given the opportunity to share and discuss their responses.</li> <li>2. Class discussion on budgeting and prioritizing expenses while students take notes on the given information.</li> <li>3. Students will be shown a sample budget and be asked to analyze the budget for necessary expenses, unnecessary expenses, and additional ways to reduce the budget without</li> </ol>

<p><b>Assessment:</b></p> <p>Completed budget Employability rubric Student log sheets</p>	<p>compromising quality.</p> <ol style="list-style-type: none"> <li>4. Distribute budget project instructions and student log sheets.</li> <li>5. Divide students into partnerships and have them complete their log sheets for the day.</li> <li>6. Brainstorm budget expenses based on initial startup of compost collection and storage.</li> <li>7. Students will prepare an itemized budget that will include categories of expenses, the item cost, and a total budget price.</li> <li>8. Once the budget has been completed, students will complete their log sheets to summarize work completed for the day and determine what work will need to be completed the following day.</li> </ol>
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Name \_\_\_\_\_ Date \_\_\_\_\_ Block \_\_\_\_\_

### **Creating a Budget Instructions**

Certain costs are associated with any project. Your job is to create an operating budget for one year that includes the purchase of supplies to build and maintain the compost bin facility, monitor the composting process, advertising, and the daily collection process.

#### **Objectives:**

1. To develop a \$750.00 yearly operating budget that includes the initial start-up and maintenance of a school compost project.
2. Develop successful work habits by demonstrating workplace readiness skills.

#### **Components:**

1. Your budget should include items for each category, item description/number, vendor you are purchasing materials from, price, and quantity.
2. Categories to include when calculating a budget are:
  - a. Tools/Equipment
  - b. Fasteners/Lumber
  - c. Marketing Campaign Materials
  - d. Program Maintenance
    - i. Includes data collection materials
    - ii. Cost of running program for one year- this number will be an estimate that is based on consumable materials used in the collection process (ex. plastic gloves) and anticipated costs associated with compost bin maintenance or repairs



## Employability Skills

This rubric can be used to evaluate students during individual or group activities that range from the design and implementation of the compost program to maintaining the program throughout the year. Categories can be modified based on which skills the teacher wants to evaluate students for when completing various project related tasks. The rubric can be used for individual projects or can be used to grade overall student workplace readiness skills over the duration of the entire project.

Skill	5 Excellent	4 Above Average	3 Satisfactory	2 Needs Improvement	1 Unsatisfactory	Self- Assessment	Teacher Assessment
Positive Work Ethic	Student follows all directions precisely, gathers all materials independently and is ready to work. Student wisely uses time to complete work,	Student follows direction and gathers all materials with 1 prompt. Work is complete on time.	Student follows direction and gathers all materials with 2 prompts to stay on task	Student follows most directions and gathers materials with 3 prompts to stay on task. Work is late.	Student does not follow directions or gather materials as needed to complete work on time. 4 or more prompts to stay task.	/	/
Integrity	Always abides by workplace policies and laws and demonstrates honesty and reliability.	Needs 1 reminder to abide by workplace policies and laws and demonstrates honesty and reliability.	Needs 2 reminders to abide by workplace policies and laws and demonstrates honesty and reliability.	Needs 3 reminders to abide by workplace policies and laws and demonstrates honesty and reliability.	Needs 4 reminders to abide by workplace policies and laws and demonstrates honesty and reliability.	/	/
Teamwork	Student consistently listens to others. All interactions are respectful and appropriate. Student listens to, shares with, and supports the efforts of others. Motivates everyone to contribute equally.	Student listens to, shares and supports others. Statement and responses are respectful and appropriate body language is exhibited consistently	Student listens to, shares and supports others most of the time. Statement and responses are respectful and appropriate body language is exhibited most of the time.	Student statements, responses and body language are sometimes respectful; occasionally has a negative tone. Does not always listen to, share with, and support the efforts of others.	Student statements, responses and/or body language were consistently not respectful. Student rarely listens to, shares with, and supports the efforts of others.	/	/
Time, Task & Resource Management	Organizes and implements a productive plan of work at all times	Organizes and implements a productive plan of work most of the time.	Organizes and implements a productive plan of work most of the time, but needs some reminders to be productive.	Organizes and implements a productive plan of work sometimes.	Rarely organizes and implements a productive plan of work.	/	/

Communication	Student knows and is able to identify and communicate the necessary tools and tasks for completion of the project. Student self-advocates and asks appropriate questions to improve understanding.	Student is able to identify and communicate the necessary tools and tasks for completion of the project with limited help.	Student is able to identify and communicate the necessary tools and tasks for completion of the project a majority of the time. Needs help occasionally.	Student is unable to identify and communicate the use of tools to complete the task without continuous prompting.	Student use of tools poses a danger to self and others. Student cannot communicate understanding of the task.	/	/
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## Student Log Sheet

This log sheet can be given to students daily for the duration of the unit to monitor individual and group progress for the class period. Using this sheet can help students to demonstrate an understanding of time, task, and resource management by creating a plan of work for each day, evaluating project development at the end of each day and determining the next completion steps for the project.

Name(s) \_\_\_\_\_

Date \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

### Daily Goal(s) to Accomplish

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

### Tasks to Accomplish Goal

### Person to Complete Job

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

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\_\_\_\_\_

### Work Completed at End of Class

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

### Next Steps to Complete for Project

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Name \_\_\_\_\_ Date \_\_\_\_\_ Block \_\_\_\_\_

### Compost Post Test

Read through each question below and choose the best possible answer. Record your answer in the space provided. Do not leave any questions blank.

1. What is composting?
2. List five materials that can safely be composted.
3. What is a compost recipe?
4. A) What is pre-consumer waste?  
B) What is post-consumer waste?
5. What precautions should be followed when collecting food scraps?
6. A) What temperature should compost reach in order to kill any harmful bacteria?  
B) How many days should the temperature stay this temperature in order to finish cooking the compost?
7. How often should compost be turned?
8. On average, how much waste can be saved from entering the landfill by composting?
9. What kind of smell should compost have?
10. What can be done to keep animals from being attracted to a compost pile?
11. What can be done with compost once it is finished being made?
12. What are three benefits of composting?
13. What kind of structure should be used for a composting area?



## Workplace Readiness Skills Post Survey

Name \_\_\_\_\_ Date \_\_\_\_\_ Block \_\_\_\_\_

Instructions: Read each statement that relates to workplace readiness skills and indicate your response to the statement by circling your answer.

1. I satisfactorily demonstrated a positive work ethic in my classroom.

Always                      Sometimes                      Never

I can work to improve in this area by \_\_\_\_\_

\_\_\_\_\_

2. I satisfactorily demonstrated integrity in my classroom.

Always                      Sometimes                      Never

I can work to improve in this area by \_\_\_\_\_

\_\_\_\_\_

3. I satisfactorily demonstrated teamwork in my classroom.

Always                      Sometimes                      Never

I can work to improve in this area by \_\_\_\_\_

\_\_\_\_\_

4. I satisfactorily demonstrated speaking and listening skills in my workplace.

Always                      Sometimes                      Never

I can work to improve in this area by \_\_\_\_\_

\_\_\_\_\_

5. I satisfactorily demonstrated reading and writing skills in my workplace.

Always                      Sometimes                      Never

I can work to improve in this area by \_\_\_\_\_

\_\_\_\_\_

6. I satisfactorily demonstrated time, task, and resource management skills in my workplace.

Always                      Sometimes                      Never

I can work to improve in this area by \_\_\_\_\_

\_\_\_\_\_

## References

Wiggins, G.P., & McTighe, J. (2005). *Understanding by Design*. Alexandria, VA: Association for Supervision and Curriculum Development.

## Appendix B

The questions below were included on the survey participants were given to evaluate the materials created for use within the agricultural education classroom. This survey was prepared and administered online through Qualtrics.

### Survey

#### Developing Workplace Readiness Skills Through Designing and Running a School

#### Composting Program

Workplace readiness skills are considered essential competencies in all agricultural education courses taught in the state of Virginia. This survey is designed to provide feedback on a set of sample classroom materials. These materials can be easily implemented within the classroom or altered to better suit the needs of the individual classroom teacher. You will receive the accompanying classroom materials to look over and are asked to then complete the survey. Your feedback will be used to improve these resources before they are made accessible to other agricultural educators. Thank you for your participation in this project and helping to improve student learning opportunities in agricultural education programs.

**Communication Skills:** Communication skills addressed by the selected activities are focused on reading and writing.

Q1 List at least one suggestion for improving the invitation letter activity that would enhance student opportunities to learn communication skills. Your suggestion can include an activity modification or classroom extension activity that would suit your classroom needs.

Q2 List at least one suggestion for improving the informational brochure activity that would

enhance student opportunities to learn communication skills. Your suggestion can include an activity modification or classroom extension activity that would suit your classroom needs.

Q3 List at least one suggestion for improving the press release activity that would enhance student opportunities to learn communication skills. Your suggestion can include an activity modification or classroom extension activity that would suit your classroom needs.

Q4 Indicate your opinion of how well the listed activity helps to reinforce the selected workplace readiness skill within the agricultural education classroom by clicking the corresponding answer choice.

	Strongly agree	Somewhat agree	Neutral	Somewhat disagree	Strongly disagree
Invitation Letter					
Informational Brochure					
Press Release					

Q5 Job Specific Math Skills: Job specific math skills as outlined by the Virginia CTE Resource Center promote mathematical reasoning to accomplish tasks. These skills can vary based on the work being completed.

Q6 List at least one suggestion for improving the data collection table activity that would enhance student opportunities to learn job specific math skills. Your suggestion can include an activity modification or classroom extension activity that would suit your classroom needs.

Q7 List at least one suggestion for improving the scale drawing activity that would enhance student opportunities to learn job specific math skills. Your suggestion can include an activity modification or classroom extension activity that would suit your classroom needs.

Q8 List at least one suggestion for improving the bill of materials activity that would enhance student opportunities to learn job specific math skills. Your suggestion can include an activity modification or classroom extension activity that would suit your classroom needs.

Q9 List at least one suggestion for improving the creating a budget activity that would enhance student opportunities to learn job specific math skills. Your suggestion can include an activity modification or classroom extension activity that would suit your classroom needs.

Q10 Indicate your opinion of how well the listed activity helps to reinforce the selected workplace readiness skill within the agricultural education classroom by clicking the corresponding answer choice.

	Strongly agree	Somewhat agree	Neutral	Somewhat disagree	Strongly disagree
Data Collection Table					
Scale Drawing					
Bill of Materials					
Creating a Budget					

Q11 Employability Skills: Employability skills include a positive work ethic, integrity, teamwork, and time, task, and resource management.

Q12 Indicate your opinion of how well the listed activity helps to reinforce workplace readiness skills within the agricultural education classroom by clicking the corresponding answer choice.

	Strongly agree	Somewhat agree	Neutral	Somewhat disagree	Strongly disagree
Invitational Letter					
Informational Brochure					
Press Release					
Data Collection Table					
Scale Drawing					
Bill of Materials					
Creating a Budget					

Q13 Do you teach middle school or high school?

Middle School

High School

Q14 How many years have you been an agricultural education teacher?

Q15 What agricultural education courses are you currently teaching?

Q16 Would you see yourself implementing a composting program in your agriculture department?

No

Maybe

Yes

Q17 Explain your response to question 14 on whether or not you see yourself implementing a composting program in your agriculture department.

Q18 Would you see yourself implementing a school wide composting program?

No

Maybe

Yes

Q19 Explain your response to question 16 on whether or not you see yourself implementing a school wide composting program.

Q20 The supplied classroom materials were created to be easily modified so they can be applied to other subject areas in agricultural education classes. Do you think it would be easy to adapt the supplied materials to other subject areas within agricultural education department?

No

Maybe

Yes

Q21 Explain your response to question 18 on whether or not you think it would be easy to adapt the supplied materials to other subject areas within the agricultural education department.

Q22 In what ways would you adapt the supplied classroom materials to use them within your own classroom?

Q23 Do you feel the incorporation of workplace readiness skills as essential competencies in all agricultural education classes is beneficial to students?

Yes

Maybe

No

Q24 Explain your response to question 23 on whether or not you feel the incorporation of workplace readiness skills as essential competencies in all agricultural education classes is beneficial to students.

Q25 Provide three specific examples of how you currently incorporate workplace readiness skills into your classroom and laboratory activities.