

Revised January 2020



Illinois Association FFA

Agriscience Fair Handbook

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Illinois FFA Agriscience Fair General Information

PROGRAM PURPOSE:

The FFA Agriscience Fair is designed for students interested in scientific principles and emerging technologies in the agricultural industry. The Agriscience Fair provides middle and high school students the opportunity to achieve local, state and national recognition for their accomplishments in agriscience. This program also gives students a chance to demonstrate and display agriscience projects that are extensions of their agriscience courses. Participation begins at the local level and progresses to state and national levels.

GENERAL GUIDELINES:

To qualify for the Illinois FFA Agriscience Fair each participant must be a current dues-paying FFA member in good standing with the local chapter, Illinois FFA Association and National FFA Organization during the school year in which the participant qualified to participate at the national level.

Students must be in grades 7 – 12 and conduct a scientific research project pertaining to the agriculture and food science industries and, present their findings to a panel of judges during the Illinois FFA State Convention. A graduating senior is considered eligible to compete at the state and national level up to and including his/her first national convention following graduation. The participant must also be enrolled in at least one agricultural education course during the school year in which the participant qualified to participate. Once a student places in the top three of a division and category at the national level, he/she can no longer compete in that division and category regardless of the research subject.

MULTIPLE RESEARCH PROJECTS FROM A CHAPTER:

If more than one agriscience project is entered from the same chapter and/or school, then projects must differ in Research hypotheses (questions or objectives), findings related to the research hypothesis (questions or objectives), conclusions, recommendations, and student researcher(s). Each student researcher may only participate in one project.

ACCESSIBILITY FOR ALL STUDENTS:

All special needs requests and appropriate documentation as outlined in the Accessibility Form at the end of this handbook must be submitted to the Agriscience Fair Superintendent by May 15.

PLAGIARISM:

An agriscience fair project must be the result of a student's own effort and ability. However, in securing information such as direct quotes or phrases, specific dates, figures or other materials, that information must be marked and identified appropriately. Non-compliance represents plagiarism and will automatically disqualify a participant.

Student researcher(s) may not:

- In any way falsify a permission form, scientific paper or display.

- Use another person's results or thoughts as their own even with the permission of this person. This includes work done by a family member or a mentor.
- Use information or data obtained from the internet without proper citation.
- Re-enter a project with only minor changes.

TIE-BREAKERS:

In the event of a tie, the national finalist candidate winner will be determined by the score of the written report. If a tie still exists, the tie will be broken on scores received in the following sections or the convention interview in the following order: knowledge gained, thoroughness/information, results/conclusions.

AWARDS:

National Finalist Candidates and additional special awards will be designated as funding is available. Advisors will be notified via e-mail regarding which projects were selected as national finalist candidates.

The following awards being presented:

- a. National Finalist Candidates- presented with National FFA Recognition Plaque on stage
- b. Special Awards – as funding allows
- c. All participants – certificate & Agriscience Fair Medal during the Agriscience Fair

Illinois FFA Agriscience Fair Timeline/Due Dates - 2020

- April 15th Deadline to enter projects into the Illinois FFA Agriscience Fair via Google Form
- April 20th Applications will be reviewed by the fair superintendent to determine agriculture relevance of the project and insure all projects are entered in the proper category and that the project is scientific in nature. Participants/Advisors will be notified of any category changes or concerns.
- May 1st Written reports will be e-mailed to the Agriscience Fair superintendent. Reports will be shared with reviewers by the second week of May.
- May 29th Written reports will be evaluated by two reviewers with the average score serving as 25% of the overall score for the Illinois Association FFA Agriscience Fair.
- June 9th Agriscience Fair Interviews will be held to determine the remaining 75% of the overall score. Official dress is required for this event. Participants should only bring their display.

Schedule for Day of the Event

- 9:00 a.m. Judges Check-In in Designated Area
- 9:15 a.m. Judges Meeting and Review of Materials/Expectations
- 9:30 a.m. Students will be interviewed by a qualified committee at designated interview times (15 minutes in length and 5 minutes to set-up). Lunch and parking garage vouchers will be provided to judges.
- June 10th National Finalists will be recognized on stage at the Illinois Association FFA State Convention (more details to follow). There will not be a dinner in 2020.
- June 11th Displays can be removed from the Illinois Association FFA State Convention.
- June 25th National Finalist Entries due to National FFA Center online.
- July 1st Deadline for FFA Advisors to certify national entries online.



Planning Your Agriscience Fair Project

- *Human Vertebrate Guidelines*
- *Non-Human Vertebrate Guidelines*
- *Selecting a Division*
- *Selection a Category*

HUMAN VERTEBRATE GUIDELINES

The following policies will govern the use of human beings in agriscience fair research projects:

1. No projects involving human cultures of any type (mouth, throat, skin or otherwise) are allowed. However, tissue cultures purchased from reputable biological supply houses or research facilities are suitable for the student researcher(s) use.
2. Projects that involve taste, color, texture or any other choice are allowed, but are limited to preference only. Quantities of normal food and non-alcoholic beverages are limited to normal serving amounts or less. No project may use drugs, food or beverages in order to measure their effect on a person.
3. The only human blood that may be used is that which is either obtained through a blood bank, hospital or laboratory. No blood may be drawn by any person or from any person specifically for an agriscience project. This rule does not preclude student researcher(s) making use of the data collected from blood tests not made exclusively for an agriscience project.
4. Psychological, educational and opinion studies are allowed. Projects that involve learning, ESP, motivation, hearing and vision are also permitted (examples might include surveys, questionnaires, tests, etc.).
5. Data/record review studies in which the data is taken from preexisting data sets that are publicly available and/or published and do not involve any interaction with humans or the collection of any data from a human participant for the purpose of the research project are allowed.
6. No project will be allowed that is in violation of these rules. No person may perform any experiment for student researcher(s) that violates any of the rules.

NON-HUMAN VERTEBRATE GUIDELINES

The following policies will govern the use of non-human vertebrates in agriscience fair research projects:

1. The use of vertebrate animals in agriscience projects is allowable under the conditions and rules below. Vertebrate animals are defined as:
 - a. Live, nonhuman vertebrate mammalian embryos or fetuses.
 - b. Tadpoles.
 - c. Bird and reptile eggs within three days (72 hours) of hatching.
 - d. All other non-human vertebrates (including fish) at hatching or birth.
2. Vertebrate animal studies may be conducted at a home, school, farm, ranch, in the field, etc. This includes:
 - a. Studies of animals in their natural environment.
 - b. Studies of animals in zoological parks.
 - c. Studies of livestock that use standard agricultural practices.
 - d. Studies of fish that use standard aquaculture practices.
3. Intrusive techniques used cannot exceed momentary pain and must comply with commonly accepted agriculture and livestock management procedures.
4. Student researcher(s) are prohibited from designing or participating in an experiment associated with the following types of studies on vertebrate animals:
 - a. Induced toxicity studies with known toxic substances that could cause pain, distress or death, including but not limited to alcohol, acid rain, harmful chemicals, or heavy metals.
 - b. Behavioral experiments using conditioning with aversive stimuli, mother/infant separation or induced helplessness.
 - c. Studies of pain.
 - d. Predator/vertebrate prey experiments.
5. Food and water cannot be used or withheld for more than 24 hours for maze running and other learning or conditioning activities.
6. The student researcher(s) and advisor have the responsibility to see that animals are properly cared for in a well-ventilated, lighted and warm location with adequate food, water and sanitary conditions. Care must be taken to see that organisms are properly cared for during weekends and vacation periods.
7. Livestock or fish raised for food using standard agricultural/aquacultural production practices may be euthanized by a qualified adult for carcass evaluation.
8. No vertebrate animal deaths due to the experimental procedures are permitted in any group or subgroup.

- a. Studies that are designed or anticipated to cause vertebrate animal death are prohibited.
 - b. Any death that occurs must be investigated by a veterinarian or another professional qualified to determine if the cause of death was incidental or due to the experimental procedures. The project must be suspended until the cause is determined and then the results must be documented in writing.
 - c. If death was the result of the experimental procedure, the study must be terminated, and the study will not qualify for the National FFA Agriscience Fair.
9. Projects that involve behavioral studies or newly hatched chickens or other birds will be allowed, provided no change has been made in the normal incubation and hatching of the organism and all vertebrate rules are followed.

SELECTING A DIVISION

Students can compete in the Agriscience Fair as an individual or as a team. Each member and/or team may enter only one project. Exhibited projects and project reports will be the result of the students' own efforts. A team is a maximum of two members working cooperatively on the same project.

- Division 1 – Individual member in grades 7 and 8
- Division 2 – Team of two members in grades 7 and 8
- Division 3 – Individual member in grades 9 and 10
- Division 4 – Teams of two members in grades 9 and 10
- Division 5 – Individual member in grades 11 and 12
- Division 6 – Team of two members in grades 11 and 12

Grade level is determined by the grade of the student at the time of application. Teams may consist of two students from different grades; however, the grade of the older student will be used to determine the division for competition. Team members must be from the same chapter at the time of qualification.

SELECTING A CATEGORY

Students must identify the appropriate category for their project. Any project that is placed in a questionable category will be submitted to the National FFA Organization for review prior to the Illinois FFA Agriscience Fair.

- **Animal Systems**

The study of animal systems, including life processes, health, nutrition, genetics, management and processing, through the study of small animals, aquaculture, livestock dairy, horses and/or poultry.

Examples:

- Compare nutrient levels on animal growth
- Research new disease control mechanisms
- Effects of estrous synchronization on ovulation
- Compare effects of thawing temperatures on livestock semen
- Effects of growth hormone on meat/milk production

- **Environmental Services/Natural Resource Systems**

Environmental Service Systems: The study of systems, instruments and technology used to monitor and minimize the impact of human activity on environmental systems.

Natural Resource Systems: The study of the management, protection, enhancement and improvement of soil, water, wildlife, forests and air as natural resources.

The study of systems, instruments and technology used in waste management; the study of the management of soil, water, wildlife, forests, and air as natural resources and their influence on the environment.

Examples:

- Effects of agricultural chemicals on water quality
- Effects of cropping practices on wildlife populations
- Compare water movements through different soil types

- **Food Products and Processing Systems**

The study of product development, quality assurance, food safety, production, sales and service, regulations and compliance and food service within the food science industry.

Examples:

- Effects of packaging techniques on food spoilage rates
- Resistance of organic fruits to common diseases
- Determining chemical energy stored in foods
- Control of molds on bakery products
- Effects of the amount of sucrose used in baked goods
- Use of a triangle test in sensory science

- **Plant Systems**

The study of plant life cycles, classifications, functions, structures, reproduction, media and nutrients, as well as growth and cultural practices, through the study of crops, turf grass, trees and shrubs and/or ornamental plants.

Examples:

- Determine rates of transpiration in plants
- Effects of heavy metals such as cadmium on edible plants
- Compare GMO and conventional seed/plant growth under various conditions
- Effects of lunar climate and soil condition on plant growth
- Compare plant growth of hydroponics and conventional methods

- **Power, Structural and Technical Systems**

The study of agricultural equipment, power systems, alternative fuel sources and precision technology, as well as woodworking, metalworking, welding and project planning for agricultural structures.

Examples:

- Develop alternate energy source engines
- Create minimum energy use structures
- Compare properties of various alternative insulation products
- Investigation of light/wind/water energy sources

- **Social Systems**

The study of human behavior and the interaction of individuals in and to society, including agricultural education, agribusiness economic, agricultural communication, agricultural leadership and other social science applications in agriculture, food and natural resources.

Examples:

- Investigate perceptions of community members towards alternative agricultural practices
- Determine the impact of local/state/national safety programs upon accident rates in agricultural/natural resource occupations
- Comparison of profitability of various agricultural/natural resource practices
- Investigate the impact of significant historical figures on a local community
- Determine the economical effects of local/state/national legislation impacting agricultural/natural resources
- Consumer confidence and understanding of food labels
- Economic effect of employment rate and meat consumption



Reporting the Findings of Your Agriscience Fair Project

- Project Components
 - Log Book
 - Written Report
 - Display
 - interview
- The Written Report Components

PROJECT COMPONENTS

- **LOG BOOK**

The log book is one of the most important pieces of a research project. It will contain accurate and detailed notes of a well-planned, implemented research project. The notes should be a consistent and thorough record of the project. These notes will be the greatest aid when composing the written report.

- **WRITTEN REPORT**

As developing student researchers, the expectations for the written report are slightly different for Divisions 1 and 2 (7th and 8th grade students) compared to Divisions 3, 4, 5 and 6. The purpose of the rubric for Divisions 1 and 2 is to introduce young student researchers to the process of scholarly thinking. As the student researcher ages, skills grow and advance to utilize the rubric for Divisions 3-6 (grades 9-12).

NEW FOR 2020: The written report must be e-mailed to the Agriscience Fair Superintendent by May 1st in a Word document for review by a panel of judges. The written report will be scored prior to the day of the event. Scores from the written report will count as 25 percent of the overall score. Interview judges will not see the scores from the written report and the convention interview score will account for 75 percent of the overall score.

- **DISPLAY**

All projects must have the following information attached to the exhibit:

- Name of person(s) responsible for developing the project
- Chapter name, State
- Title of category entered
- Division entered (1, 2, 3, 4, 5, 6)

Digital printing of the poster display is recommended. It is recommended that the display is a stable flat display, with no attachments (with rings, taped, etc.) as they will be displayed on an easel during the interview. Tri-fold poster boards are not recommended. The maximum size for a project is 48 inches wide by 30 inches deep (the distance from front to back) by 36 inches high (from top of table to top of display). Participant(s) are responsible for providing backing for the poster if needed.

No props, logbooks, handouts, or electronics are permitted. No tablets, iPads, cell phones, or other electronic devices will be permitted. Failure to meet these requirements will result in disqualification.

- **INTERVIEW**

All exhibitors are required to meet either face-to-face or electronically (per approval from event superintendent) with the judges to explain their projects. Explanation and questioning may not exceed 15 minutes. The interview is an opportunity for judges to ask questions about the project. Interview and questions for agriscience fair participants will normally be five to 10 minutes. A team project must be presented by a team of two. If only one team member is

present, the team cannot be selected as a national finalist. Substitutions are not permitted and will cause disqualification. Exhibitors with conflicts due to participation in other FFA competitions/events must notify the superintendent prior to the day of the event for preferential scheduling.

NEW FOR 2020:


Presentations will be made to judges at a pre-determined interview time. The exhibitor will have an easel to utilize for the display.

THE WRITTEN REPORT

Format of Report: *The written report template is required for state competition.*

- Font size must be 12 using Arial, Courier or Times New Roman font.
- The report should be double spaced.
- The written report template for Division 1 & 2 can be found at <https://ffa.app.box.com/s/cf4o9ys85ieer7z5xqcjn17raji0tvgp/file/289991270987>
- Division 3-6 can be found at <https://ffa.app.box.com/s/cf4o9ys85ieer7z5xqcjn17raji0tvgp/file/289990393154>
- The report should use APA style 6th ed. Revised for all in-text and reference list citations. See the Owl @ Purdue website for APA formatting information: https://owl.purdue.edu/owl/purdue_owl.html Additionally, an APA style book can be purchased or checked out from your local library.

Division 1-2 (Grades 7-8)	Division 3-6 (Grades 9-12)
See Summary below.	<p>ABSTRACT</p> <p>A brief summary of the paper, which concisely describes the purpose, methods, results and conclusions. May include potential research applications or future research. Should not contain cited references. It should be no longer than one page and in paragraph form. Because this is the first page of the project report, it will be where the reader forms an opinion on the study. In the abstract, arrange the points as:</p> <ol style="list-style-type: none"> 1. Purpose 2. Procedure 3. Results 4. Conclusions <p>This section would include methods, results/ effects of major treatments, and main conclusions. Do not include discussion, citations and footnotes, or references to tables and figures.</p>

Division 1-2 (Grades 7-8)	Division 3-6 (Grades 9-12)
<p>IMPORTANCE</p> <p>The importance answers the question “Why was the work done?” Provide an explanation of:</p> <ul style="list-style-type: none"> • Why the research topic is important to the agriculture industry • What problem the investigation attempts to solve <p>Each point should be addressed in a paragraph for a minimum of two paragraphs in the importance section.</p>	<div style="text-align: center; margin-bottom: 10px;">  </div> <p>INTRODUCTION</p> <p>The introduction answers the question “Why was the work done?” It provides background on the subject in several paragraphs. The introduction should clearly state the problem that justifies conducting the state the problem that justifies conducting the research, the purpose of the research, its impact on agriculture, the findings of earlier work and the general approach and objectives. You must cite sources for statements that are not common knowledge. The last paragraph of the introduction includes the objectives of the study.</p>

Division 1-2 (Grades 7-8)	Division 3-6 (Grades 9-12)
<p>OTHER'S WORK The other's work section details the information that currently exists concerning the research topic. What other information did the student researcher(s) read before conducting the project? What information did student researcher(s) look up during the investigation? Reference information regarding where the publication was found should be listed, then a brief summary should be written by the student researcher(s) for each publication. Publications could include articles about similar studies, similar research methods, history of the research area and any other items that support the current knowledge base for the research topic.</p>	<p>LITERATURE REVIEW The literature review should detail what information currently exists concerning the research project. Information in the review should be written in APA style and should include publications used for the research. Publications cited could include articles about similar studies, similar research methods, history of the research area and any other items that support the current knowledge base for the research topic and how the project might complement existing information.</p>

Division 1-2 (Grades 7-8)	Division 3-6 (Grades 9-12)
<p>MATERIALS AND METHODS This section enables others to reproduce the results by duplicating the study. Write in first person, encompass all materials required and explain the study design by sharing the technical and experimental procedures used. If used, any statistical procedures are included here.</p>	<p>MATERIALS AND METHODS A well-written materials and methods section enables others to reproduce the results by replicating the study. Write in past tense, third person, encompass all materials required, state the hypothesis/research questions and explain the study design by sharing the technical and experimental procedures employed. With fieldwork, describe the study site. Include any statistical procedures employed.</p>

Division 1-2 (Grades 7-8)
<p>HYPOTHESIS/ANTICIPATED RESULTS The student researcher(s) state the hypothesis and/ or anticipated results. What are the expected results of the study?</p>



Division 1-2 (Grades 7-8)	Division 3-6 (Grades 9-12)
<p>RESULTS</p> <p>This section is a summary of the results, even if they are not what was hypothesized. Do not include discussion or conclusions about the data. Tell the reader exactly what was discovered and what patterns, trends or relationships were observed. Decide on the most meaningful way to present the data (tables, figures) and refer to them in the text. Data should be able to stand alone in the form of tables and/or figures. Data should not be added after the state level selection as it may alter the discussion and conclusions.</p>	<p>RESULTS</p> <p>This section is a summary of the results, even if they are not what was hypothesized. Do not include discussion or conclusions about the data. Tell the reader exactly what was discovered and what patterns, trends or relationships were observed. Decide on the most meaningful way to present the data (tables, figures) and refer to them in the text. Data should be able to stand alone in the form of tables and/or figures. Data should not be added after the state level selection as it may alter the discussion and conclusions.</p>

Division 1-2 (Grades 7-8)	Division 3-6 (Grades 9-12)
<p>DISCUSSION</p> <p>In this section, the student researcher(s) should include information about the meaning of the results, how the results relate to the Other's Work section and what impact the study has on the agriculture industry</p>	<p>DISCUSSION AND CONCLUSIONS</p> <p>In this section, draw conclusions from the results of the study and relate them to the original hypothesis. It is helpful to briefly recap the results and use them as a foundation for the conclusions. If the results were not what was expected, take this opportunity to explain why. Give details about the results and observations by elaborating on the mechanisms behind what happened. Tie the study in with the literature, but do not hesitate to offer sound reasoning of your own. Discussion should refer to facts and figures in the results section and provide recommendations for practice and future research. Discussion and conclusions should also address the impact the research has on the agriculture industry.</p>

Division 1-2 (Grades 7-8)
<p>CONCLUSIONS</p> <p>In the conclusion the student researcher(s) should share recommendations on what should be done or what should change as a result of the research. It is helpful to briefly recap the results and use them as a foundation for the conclusions. If the results were not what was expected, take this opportunity to explain why. The student researcher(s) should share what the next steps are to continue the study.</p>



Division 1-2 (Grades 7-8)	Division 3-6 (Grades 9-12)
See Other's Work.	<p>REFERENCES</p> <p>Only significant, published and relevant sources accessible through a library or an information system should be included. All citations in the text must be included in the reference section. When information or facts are used that are not common knowledge, give credit to the source of that information by citing a reference. Use the APA style recognized citation system throughout the report.</p>

Division 1-2 (Grades 7-8)	Division 3-6 (Grades 9-12)
<p>SUMMARY</p> <p>The summary should be two to three paragraphs describing the study conducted. Describes why the student researcher(s) chose to conduct the study, why the study is important to the agriculture industry, how the student researcher(s) conducted the study, what the student researcher(s) found by conducting the study, and how the results apply within the agriculture industry</p>	See Abstract.

Division 1-2 (Grades 7-8)	Division 3-6 (Grades 9-12)
<p>ACKNOWLEDGEMENTS</p> <p>Acknowledge anyone who helped in any aspect of the project in this section.</p>	<p>ACKNOWLEDGEMENTS</p> <p>Acknowledge anyone who helped in any aspect of the project in this section.</p>

Division 1-2 (Grades 7-8)	Division 3-6 (Grades 9-12)
<p>SKILL DEVELOPMENT</p> <p>The student researcher(s) select three appropriate competencies based on the study conducted. Two competencies must be from the study's primary pathway and the third can be from any pathway. The student researcher(s) demonstrate skills that are appropriate for the scope of the project. The project demonstrates application of skill attainment with measurable impact on the overall study.</p>	<p>SKILL DEVELOPMENT</p> <p>The student researcher(s) select five appropriate competencies based on the study conducted. Three competencies must be from the study's primary pathway and the other two can be from any pathway. The student researcher(s) demonstrate skills that are appropriate for the scope of the project. The project demonstrates application of skill attainment with measurable impact on the overall study</p>

Division 1-2 (Grades 7-8)	Division 3-6 (Grades 9-12)
<p>SPELLING/GRAMMAR</p> <p>The student researcher(s) should use correct spelling, complete sentences and proper grammar throughout the report.</p>	<p>APA STYLE/SPELLING</p> <p>The student researcher(s) should use correct spelling, complete sentences, proper grammar and appropriate APA style writing throughout the report.</p>



Information for National Finalists

To be named a National Finalist Entry for the Illinois FFA Agriscience Fair, student(s) must be selected as the top project in their Division/Category, and submit their national application and written report online to the National FFA Organization.

Illinois Association FFA Staff will declare Illinois FFA's National Entries to the National FFA Organization and provide state approval. After the entries are declared on-line by state staff, students must be certified on the National Agriscience Fair Application on the Advisor Approval Tab on the advisor's dashboard when logged in on the National FFA Website by July 1st.

If student projects are selected as one of the Top 10 in their respective category during pre-qualifying national judging, they will be invited to compete at the National Agriscience Fair during the National FFA Convention in the fall.



Appendix

- **Scoresheet for Written Report – Division 1 & 2 (Grades 7-8)*
- **Rubric for Written Report - Division 1 & 2 (Grades 7-8)*
- **Scoresheet for Written Report – Division 3-6 (Grades 9-12)*
- **Rubric for Written Report for Division 3-6 (Grades 9-12)*
- **Scoresheet for Convention Interview Divisions 1, 3, 5*
- **Rubric for Convention Interview Divisions 1, 3, 5*
- **Scoresheet for Convention Interview Divisions 2, 4*
- **Rubric for Convention Interview Divisions 2, 4*
- **Literature Review Sources Helper*
- **Accessibility Documentation – COMING SOON*

Scoresheet for Written Report - Division 1 & 2 (Grades 7 & 8)

Student(s) _____ Chapter: _____

Category: _____ Division: _____

Area		Points Possible	Points Earned
Importance	<p>The importance includes a one paragraph answer for each question that clearly answers</p> <ul style="list-style-type: none"> Why the topic is important to the agricultural industry? What problem does the investigation solve for agriculture 	10	
Other's Work	Clearly details what information currently exists concerning the research project. Reference where the information was found (website, book, article, etc.) is listed, then a paragraph written by the student researcher(s) clearly describing the reference and information is provided for each publication used.	15	
Materials & Methods	Clearly written to enable others to replicate the study and results. Section is written in first person and encompasses all materials required. If used, the statistical procedures are included.	10	
Hypothesis/Anticipated Results	Student researcher(s) clearly state the hypothesis and/or anticipated results.	5	
Results	Written results of the project are summarized. Trends and relationships are clearly addressed. No conclusions are made in this section. Data that can stand alone in the form of tables and/or figures are included.	20	
Discussion	<p>The discussion includes clear, detailed answers for each question:</p> <ul style="list-style-type: none"> What do the results of the study mean? How are they related to what others found in the "Others' Work" section? 	10	
Conclusions	The conclusion clearly states what should be done and/or changed as the result of the research. Clearly states what the next steps are to continue the research.	10	
Summary	The summary is two to three paragraphs describing the study conducted. Describes why the student researcher(s) chose to conduct the study, why the study is important to the agriculture industry, how the study was conducted, what was found by conducting the study and how the results apply within the agriculture industry.	5	
Acknowledgements	Detailed list or paragraph is included acknowledging anyone who assisted with any aspect of the project and how they helped.	5	
Skill Development	All three competencies (two from primary pathway, one from any other pathway) demonstrate skills that are appropriate for the scope of the research project. The project demonstrates application of skill attainment with significant measurable impact on the overall project.	5	
Spelling/Grammar	Student researcher(s) use complete sentences; no spelling or grammar errors present.	5	
TOTAL SCORE (100 points possible)			
<i>This constitutes 25% of the overall score to determine final ranking.</i>			

Rubric for Written Report - Division 1 & 2 (Grades 7 & 8)

Area	High Points 5-4 points	Medium Points 3-2 points	Low Points 1-0 points	Points Possible	Points Earned
Importance	The importance includes a one paragraph answer for each question that clearly answers: <ul style="list-style-type: none"> • Why is the topic important to the agriculture industry? • What problem does the investigation solve for agriculture? 	The importance includes a one paragraph answer for each question that vaguely answers: <ul style="list-style-type: none"> • Why is the topic important to the agriculture industry? • What problem does the investigation solve for agriculture? 	The importance includes a one paragraph answer for each question that poorly answers: <ul style="list-style-type: none"> • Why is the topic important to the agriculture industry? • What problem does the investigation solve for agriculture? 	10	<hr/> x 2 = <hr/>
Other's Work	Clearly details what information currently exists concerning the research project. Reference where the information was found (website, book, article, etc.,) is listed, then a paragraph written by the student researcher(s) clearly describing the reference and information it provided for each publication used.	Poorly details what information currently exists concerning the research project. Reference where the information was found (website, book, article, etc.,) is listed, then a paragraph written by the student researcher(s) vaguely describes the reference and information it provided for each publication used.	Does not detail what information currently exists concerning the research project. Reference where the information was found (website, book, article, etc.,) is listed, then a paragraph written by the student researcher(s) poorly describes or is not included on what the reference says for each publication used.	15	<hr/> x 3 = <hr/>
Materials and Methods	Clearly written to enable others to replicate the study and results. Section is written in first person and encompasses all materials required. If used, the statistical procedures are included.	Not written clearly to enable others to replicate the study and results. Section may or may not be written in first person and encompasses all materials required. The statistical procedures are included but are unclear.	Written poorly so that others cannot replicate the study and results. Section is not written in first person and does not encompass all materials required. The statistical procedures are not included.	10	<hr/> x 2 = <hr/>
Hypothesis/ Anticipated Results	Student researcher(s) clearly state the hypothesis and/or anticipated results	Student researcher(s) vaguely state the hypothesis and/or anticipated results.	Student researcher(s) do not state or poorly state the hypothesis and/or anticipated results.	5	
Results	Written results of the project are summarized. Trends and relationships are clearly addressed. No conclusions are made in this section. Data that can stand alone in the form of tables and/or figures are included.	Written results of the project are incompletely summarized. Trends and relationships are vague. No conclusions are made in this section. Data that can stand alone in the form of tables and/or figures are sometimes included.	Written results of the project are poorly summarized. Trends and relationships are not addressed. Data is not appropriately included as tables and figures.	20	<hr/> x 4 = <hr/>

Area	High Points 5-4 points	Medium Points 3-2 points	Low Points 1-0 points	Points Possible	Points Earned
Discussions	The discussion includes clear, detailed answers for each question: <ul style="list-style-type: none"> • What do the results of the study mean? • How are they related to what others found in the "Other's Work" section? 	The discussion includes vague answers for each question: <ul style="list-style-type: none"> • What do the results of the study mean? • How are they related to what others found in the "Other's Work" section? 	The discussion poorly answers each question: <ul style="list-style-type: none"> • What do the results of the study mean? • How are they related to what others found in the "Other's Work" section? 	10	<hr/> x 2 = <hr/>
Conclusions	The conclusion clearly states what should be done and/or changed as a result of the research. Clearly states what the next steps are to continue the research.	The conclusion vaguely states what should be done and/or changed as a result of the research. The next steps for research are unclear	The conclusion poorly states what should be done and/or changed as a result of the research. The next steps for research are not included.	10	<hr/> x 2 = <hr/>
Summary	The summary is two to three paragraphs describing the study conducted. Describes why the student researcher(s) chose to conduct the study, why the study is important to the agriculture industry, how the study was conducted, what was found by conducting the study, and how the results apply within the agriculture industry.	The summary is two to three paragraphs vaguely describing the study conducted. Vaguely describes why the student researcher(s) chose to conduct the study, why the study is important to the agriculture industry, how the study was conducted, what was found by conducting the study, and how the results apply within the agriculture industry.	The summary is two to three paragraphs that poorly describes the study conducted. Why the student researcher(s) chose to conduct the study, why the study is important to the agriculture industry, how the study was conducted, what was found by conducting the study, and how the results apply within the agriculture industry is unclear.	5	
Acknowledgements	Detailed list or paragraph is included acknowledging anyone who assisted with any aspect of the project and how they helped.	A list or paragraph is included acknowledging anyone who assisted with any aspect of the project.	A list or paragraph is not included acknowledging anyone who assisted with any aspect of the project and how they helped.	5	
Skill Development	All three competencies (two from primary pathway, one from any other pathway) demonstrate skills that are appropriate for the scope of the research project. The project demonstrates application of skill attainment with significant measurable impact on the overall project.	Some of the competencies somewhat demonstrate skills that are appropriate for the scope of the research project. The project demonstrates application of skill attainment with incomplete measurable impact on the overall project.	Very few competencies are listed and are not appropriate for the scope of the research project. The project does not demonstrate application of skill attainment and has no measurable impact on the overall project.	5	

Area	High Points 5-4 points	Medium Points 3-2 points	Low Points 1-0 points	Points Possible	Points Earned
Spelling/ Grammar	Student researcher(s) use complete sentences; no spelling or grammar errors present.	Student researcher(s) use complete sentences; minor spelling or grammar errors present.	Student researcher(s) do not use complete sentences; excessive spelling or grammar errors present.	5	
TOTAL SCORE (100 points possible)					
<i>This constitutes 25% of the overall score to determine final ranking.</i>					

Scoresheet for Written Report - Division 3-6 (Grades 9-12)

Student(s) _____ Chapter: _____

Category: _____ Division: _____

Area		Points Possible	Points Earned
Abstract	Abstract is brief and concisely describes the purpose, methods, results and conclusions. Abstract does not include cited references. Abstract is no longer than one page. Arrangement makes the purpose, procedure, results and conclusions clear.	5	
Introduction	Introduction answers the question "Why was the work done?" It clearly states the problem that justifies conducting the research, the purpose of the research, its impact on agriculture, the findings of earlier work and the general approach and objectives.	10	
Literature Review	The literature review details what information currently exists concerning the research project. The information includes materials used in the research and material cited such as articles about similar studies, similar research methods, history of the research area and other items that support the current knowledge base for the topic and how the project might complement existing information.	10	
Materials and Methods	Clearly written to enable others to replicate the study and results. Section is written in third person, encompasses all materials required, states the hypothesis/research questions and explains the study design. If used, the statistical procedures are included.	15	
Results	Written results of the project are summarized. Trends and relationships are clearly addressed. No conclusions are made in this section. Data that can stand alone in the form of tables and/or figures are included.	20	
Discussion and Conclusions	Brief recap of the results is included and shows how they were the foundation of the study. Sound reasoning is showing that conclusions are based on results, incorporates previous literature and related directly to the hypothesis. Discussion refers to or references facts and figures in results section and provides recommendations for practice, future research and the impact on the agriculture industry.	20	
Acknowledgements	Detailed list or paragraph is included acknowledging anyone who assisted with any aspect of the project and how they helped.	5	
References	References contain significant, published and relevant sources.	5	
Skill Development	All five competencies (three from primary pathway, two from any other pathway) demonstrate skills that are appropriate for the scope of the research project. The project demonstrates application of skill attainment with significant measurable impact on the overall project.	5	
APA Style/Spelling	APA citation style writing is used throughout the written report. No spelling or grammar errors are present.	5	
		TOTAL SCORE (100 points possible)	
		<i>This constitutes 25% of the overall score to determine final ranking.</i>	

Rubric for Written Report - Division 3-6 (Grades 9-12)

Area	High Points 5-4 points	Medium Points 3-2 points	Low Points 1-0 points	Points Possible	Points Earned
Abstract	Abstract is brief and concisely describes the purpose, methods, results and conclusions. Abstract does not include cited references. Abstract is no longer than one page. Arrangement makes the purpose, procedure, results and conclusions clear.	Abstract describes the purpose, methods, results and conclusions. Abstract does not include cited references. Abstract is longer than one page. Arrangement makes the purpose, procedure, results and conclusions vague.	Abstract poorly describes the purpose, methods, results and conclusions. Abstract includes cited references. Abstract is longer than one page. Arrangement makes the purpose, procedure, results and conclusions unclear.	5	
Introduction	Introduction answers the question "Why was the work done?" It clearly states the problem that justifies conducting the research, the purpose of the research, its impact on agriculture, the finding of earlier work, and the general approach and objectives.	Introduction answers the question "Why was the work done?" It vaguely states the problem that justifies conducting the research, the purpose of the research, its impact on agriculture, the findings of earlier work, the general approach and objectives.	Introduction does not answer the question "Why was the work done?" It does not state the problem that justifies conducting the research, the purpose of the research, its impact on agriculture, the findings of earlier work, and the general approach and objectives.	10	<hr/> x 2 = <hr/>
Literature Review	The literature review details what information currently exists concerning the research project. The information includes material used in the research and material cited such as articles about similar studies, similar research methods, history of the research area and other items that support the current knowledge base for the topic and how the project might complement existing information.	The literature review poorly details what information currently exists concerning the research project. The information may or may not include materials used in the research. Some materials cited include articles about similar studies, similar research methods and history of the research area. How the project might complement existing information is not clear.	The literature review does not detail what information currently exists concerning the research project. There is no information included or it does not reference materials used in the research. No information cited such as articles about similar studies, similar research method, or history of the research area. How the project might complement existing information is not clear.	10	<hr/> x 2 = <hr/>

Area	High Points 5-4 points	Medium Points 3-2 points	Low Points 1-0 points	Points Possible	Points Earned
Materials and Methods	Clearly written to enable others to replicate the study and results. Section is written in third person, encompasses all materials required, states the hypothesis/research questions and explains the study design. If used, the statistical procedures are included.	Not written clearly to enable others to replicate the study and results. Section may or may not be written in third person, encompasses all materials required, states the hypothesis/research questions and explains the study design. The statistical procedures are included but are unclear.	Written poorly so others cannot replicate the study and results. Section is not written in third person, does not encompass all materials required for the research and hypothesis/research questions are not stated. The statistical procedures are not listed.	15	<hr/> x 3 = <hr/>
Results	Written results of the project are summarized. Trends and relationships are clearly addressed. No conclusions are made in this section. Data that can stand alone in the form of tables and/or figures are included.	Written results of the project are incompletely summarized. Trends and relationships are vague. No conclusions are made in this section. Data that can stand alone in the form of tables and/or figures are sometimes included.	Written results of the project are poorly summarized. Trends and relationships are not addressed. Data is not appropriately included as tables and figures.	20	<hr/> x 4 = <hr/>
Discussion and Conclusions	Brief recap of the results is included and shows how they were the foundation of the study. Sound reasoning is showing that conclusions are based on results, incorporates previous literature and relates directly to the hypothesis. Discussion refers to or references facts and figures in results section and provides recommendations for practice, future research and the impact on the agriculture industry.	Brief recap of the results is included and shows how they were the foundation of the study. Unsound reasoning is shown that conclusions are based on results, vaguely incorporates previous literature and partially relates to the hypothesis. Discussion refers to or references facts and figures in results section and provides recommendations for practice, future research and the impact on the agriculture industry.	No recap of the results is included or poorly shows how they were the foundation for the study. Conclusions are not based on results, previous literature not included and do not relate directly to the hypothesis. Discussion poorly refers to or references facts and figures in the results section and does not provide recommendations for practice, future research and does not illustrate the impact on the agriculture industry.	20	<hr/> x 4 = <hr/>
Acknowledgements	Detailed list or paragraph is included acknowledging anyone who assisted with any aspect of the project and how they helped.	A list or paragraph is included acknowledging anyone who assisted with any aspect of the project.	A list or paragraph is not included acknowledging anyone who assisted with any aspect of the project and how they helped.	5	

Area	High Points 5-4 points	Medium Points 3-2 points	Low Points 1-0 points	Points Possible	Points Earned
References	Reference contain significant, published and relevant sources.	References listed are somewhat significant, published and relevant sources.	References listed are not significant, published and relevant sources.	5	
Skill Development	All five competencies (three from primary pathway, two from any other pathway) demonstrate skills that are appropriate for the scope of the research project. The project demonstrates application of skill attainment with significant measurable impact on the overall project.	Some of the competencies somewhat demonstrate skills that are appropriate for the scope of the research project. The project demonstrates application of skill attainment with incomplete measurable impact on the overall project.	Very few competencies are listed and are not appropriate for the scope of the research project. The project does not demonstrate application of skill attainment and has no measurable impact on the overall project.	5	
APA Style/Spelling	APA citation style writing is used throughout the report. No spelling or grammar errors are present.	APA citation style writing is used. Minor spelling or grammar errors are present.	APA citation style writing is not used. Excessive spelling or grammar errors are present.	5	
TOTAL SCORE (100 points possible)					
<i>This constitutes 25% of the overall score to determine final ranking.</i>					

Scoresheet for Convention Interview - Division 1, 3, 5 (Grades 7-12)

Student(s) _____ Chapter: _____

Category: _____ Division: _____

Area		Points Possible	Points Earned
Knowledge Gained	Is there evidence the student researcher(s) have acquired scientific skills and/or knowledge by doing this project? Does the student researcher recognize the scope and limitation of the problem he or she has selected?	15	
Scientific Research	<p>Has the problem been clearly stated? Have the student researcher(s) used scientific facts as a basis for new conclusions? Are the student researcher(s) aware of the basic scientific principles that lend support to the methods used and conclusions reached?</p> <p>Can the research be the basis for further study? Have the appropriate methods and scientific design principles been applied? Are the student researcher(s) aware of the empirical method (the necessity of repeating trial) and the importance of controlling the variables in order to reach valid conclusions?</p>	30	
Collaboration	Is there evidence of collaboration present? Identify the portions of the project representing the work of others. Others include student researchers, teachers, specialists in the field of study, etc.	15	
Thoroughness/ Information	How successfully was the original plan carried through to completion? Were adaptations to the study made? If so, were they made in a way that upholds the integrity of the study? Are known facts and principles stated correctly and used accurately? Have the results of experiments been reported accurately even though faulty experimental methods or conditions may have made the data unreliable? If so, have these errors been noted? Did the student researcher(s) identify areas of weakness in the study?	30	
Results/Conclusions	Have the student researcher(s) started with known facts and drawn their own conclusions? Are the conclusions consistent with the data and/or observations? Did the student researcher(s) share what was learned as a result of the research? Can student researcher(s) effectively communicate the results and impact of the study?	15	
Visual Display	Has the data been presented in the best manner for the particular type of information involved? Are spelling errors present? Does the exhibit demonstrate a general neatness and attractiveness? Is the display presented in a logical and interesting manner?	15	
Total Score (120 points possible) <i>This constitutes 75% of the overall score to determine final ranking.</i>			

Rubric for Convention Interview - Division 1, 3, 5 (Grades 7-12)

Area	High Points 5-4 points	Medium Points 3-2 points	Low Points 1-0 points	Points Possible	Points Earned
Knowledge Gained	There is evidence the student researcher(s) have acquired scientific skills and/or knowledge by doing the project. The student researcher(s) exhibit knowledge of the scope and limitations of the problem selected.	There is some evidence that the student researcher(s) have acquired scientific skills and/or knowledge by doing this project. The student researcher(s) have limited knowledge of the scope and limitations of the problem selected.	There is no evidence that the student researcher(s) have acquired scientific skills and/or knowledge by doing this project. The student researcher(s) do not recognize the scope and limitations of the problem selected.	15	$\frac{\quad}{\quad} \times 3 = \frac{\quad}{\quad}$
Scientific Research	The problem is clearly stated. The student researcher(s) use scientific facts as a basis for new conclusions. The student researcher(s) are aware of the basic scientific principles that lend support to the methods used and conclusions reached. The research is the basis for further study. The appropriate methods and scientific design have been applied. The student researcher(s) are aware of the empirical method and the importance of controlling the variables in order to reach valid conclusions.	The problem is not clearly stated. The student researcher(s) use some scientific facts as a basis for new conclusions. The student researcher(s) have limited knowledge of the basic scientific principles that lend support to the methods used and conclusions reached. With some modification, the research could be the basis for further study. Some of the appropriate methods and scientific design have been applied. The student researcher(s) are partially aware of the empirical method and the importance of controlling the variables in order to reach valid conclusions.	The problem is not stated. The student researcher(s) do not use scientific facts as a basis for new conclusions. The student researcher(s) are unaware of the basic scientific principles that lend support to the methods used and conclusions reached. The researcher cannot be the basis for further study. Inappropriate methods and a flawed scientific design have been applied. The student researcher(s) are unaware of the empirical method and do not recognize the importance of controlling the variables in order to reach valid conclusions.	30	$\frac{\quad}{\quad} \times 6 = \frac{\quad}{\quad}$
Collaboration	There is clear evidence of collaboration. The student researcher(s) identified portions of the project representing the work of others.	There is lack of clear evidence of collaboration, or the student researcher(s) do not identify portions of the project representing the work of others.	There is lack of clear evidence of collaboration, and the student researcher(s) do not identify portions of the project representing the work of others.	15	$\frac{\quad}{\quad} \times 3 = \frac{\quad}{\quad}$

Area	High Points 5-4 points	Medium Points 3-2 points	Low Points 1-0 points	Points Possible	Points Earned
Thoroughness/Information	Student researcher(s) clearly communicate the original plan and adaptations that may have been made to the study. Any adaptations made uphold the integrity of the study. Facts and principles the student researcher(s) state are correct and accurate. All results of the experiments are reported accurately based on methodology used. Any errors and weaknesses in the study are identified, if applicable.	Student researcher(s) partially communicate the original plan and adaptations that may have been made to the study. Any adaptations made may uphold the integrity of the study. Facts and principles the student researcher(s) state are partially correct and accurate. Most results of the experiments are reported accurately based on methodology used. Most errors and weaknesses in the study are identified, if applicable.	Student researcher(s) do not communicate the original plan and adaptations that may have been made to the study. Adaptations made do not uphold the integrity of the study. Facts and principles the student researcher(s) state are inaccurate. Results of the experiments are not reported accurately based on methodology used. Errors and weaknesses in the study are not identified.	30	<hr/> x 6 = <hr/>
Results/Conclusions	The student researcher(s) use known facts to draw conclusions. Conclusions are consistent with the data and/or observations presented. The student researcher(s) clearly share what was learned as a result of the research. The student researcher(s) effectively communicate the results and impact of the study.	The student researcher(s) use known facts to draw conclusions. Conclusions are inconsistent with the date and/or observations presented. The student researcher(s) ineffectively share what was learned as a result of the research. The student researcher(s) ineffectively communicate the results and impact of the study.	The student researcher(s) do not use known facts to draw conclusions. Conclusions are inconsistent with the data and/or observations presented. The student researcher(s) do not share what was learned as a result of the research. The student researcher(s) do not communicate the results and impact of the study.	15	<hr/> x 3 = <hr/>
Visual Display	The data is presented in the best manner for the particular type of information involved. No spelling errors are present. The exhibit demonstrates general neatness and attractiveness. The display is presented in a logical and interesting manner.	The data is presented in a logical manner for the particular type of information involved. Some spelling errors are present. The exhibit lacks general neatness and attractiveness. The display is presented in a logical yet uninteresting manner.	The data is not presented in a rational manner for the particular type of information involved. Several spelling errors are present. The exhibit lacks general neatness and attractiveness. The display lacks logic and appears uninteresting.	15	<hr/> x 3 = <hr/>
Total Score (120 points possible)					
<i>This constitutes 75% of the overall score to determine final ranking.</i>					

Scoresheet for Convention Interview - Division 2, 4, 6 (Grades 7-12)

Student(s) _____ Chapter: _____

Category: _____ Division: _____

Area		Points Possible	Points Earned
Knowledge Gained	Is there evidence the student researcher(s) have acquired scientific skills and/or knowledge by doing this project? Does the student researcher recognize the scope and limitation of the problem he or she has selected?	15	Student #1 7.5
	<i>Each team member can receive the maximum of 7.5 points. If a team member is not in attendance the highest point possible for this category is 7.5</i>		Student #2 7.5
Scientific Research	Has the problem been clearly stated? Have the student researcher(s) used scientific facts as a basis for new conclusions? Are the student researcher(s) aware of the basic scientific principles that lend support to the methods used and conclusions reached? Can the researcher be the basis for further study? Have the appropriate methods and scientific design principles been applied? Are the student researcher(s) aware of the empirical method (the necessity of repeating trials) and the importance of controlling the variables in order to reach valid conclusions?	30	
Collaboration	Is there evidence of collaboration present? Identify the portion of the project representing the work of others. Others include student researchers, teachers, specialists in the field of study, etc.	5	
Peer to Peer Collaboration	Evidence during interview of collaboration between teammates. <i>If only one team member is present, no points will be awarded in this area.</i>	10	
Thoroughness/ Information	How successfully was the original plan carried through to completion? Were adaptations to the study made? If so, were they made in a way that upholds the integrity of the study? Are known facts and principles stated correctly and used accurately? Have the results of experiments been reported accurately even though faulty experimental methods or conditions may have made the data unreliable? If so, have these errors been noted? Did the student researcher(s) identify areas of weakness in the study?	30	
Results/ Conclusions	Have the student researcher(s) started with known facts and drawn their own conclusions? Are the conclusions consistent with the data and/or observations? Did the student researcher(s) share what was learned as a result of the research? Can student researcher(s) effectively communicate the results and impact of the study?	15	
Visual Display	Has the data been presented in the best manner of the particular type of information involved? Are spelling errors present? Does the exhibit demonstrate a general neatness and attractiveness? Is the display presented in a logical and interesting manner?	15	
Total Score (120 points possible)			
<i>This constitutes 75% of the overall score to determine final ranking.</i>			

Rubric for Convention Interview - Division 2, 4, 6 (Grades 7-12)

Area	High Points 5-4 points	Medium Points 3-2 points	Low Points 1-0 points	Points Possible	Points Earned												
Knowledge Gained	There is evidence the student researcher(s) have acquired scientific skills and/or knowledge by doing the project. The student researcher(s) exhibit knowledge of the scope and limitations of the problem selected.	There is some evidence that the student researcher(s) have acquired scientific skills and/or knowledge by doing this project. The student researcher(s) have limited knowledge of the scope and limitations of the problem selected.	There is no evidence that the student researcher(s) have acquired scientific skills and/or knowledge by doing this project. The student researcher(s) do not recognize the scope and limitations of the problem selected.	15	<table border="0" style="margin-left: auto; margin-right: auto;"> <tr> <td style="text-align: center;">Student #1</td> <td style="text-align: center;">7.5</td> <td style="border-top: 1px solid black; border-bottom: 1px solid black; width: 20px;"></td> <td style="text-align: center;">x 3</td> <td style="border-top: 1px solid black; border-bottom: 1px solid black; width: 20px;"></td> <td style="text-align: center;">=</td> </tr> <tr> <td style="text-align: center;">Student #2</td> <td style="text-align: center;">7.5</td> <td style="border-top: 1px solid black; border-bottom: 1px solid black; width: 20px;"></td> <td></td> <td style="border-top: 1px solid black; border-bottom: 1px solid black; width: 20px;"></td> <td style="text-align: center;">=</td> </tr> </table>	Student #1	7.5		x 3		=	Student #2	7.5				=
Student #1	7.5		x 3		=												
Student #2	7.5				=												
Scientific Research	The problem is clearly stated. The student researcher(s) use scientific facts as a basis for new conclusions. The student researcher(s) are aware of the basic scientific principles that lend support to the methods used and conclusions reached. The research is the basis for further study. The appropriate methods and scientific design have been applied. The student researcher(s) are aware of the empirical method and the importance of controlling the variables in order to reach valid conclusions.	The problem is not clearly stated. The student researcher(s) use some scientific facts as a basis for new conclusions. The student researcher(s) have limited knowledge of the basic scientific principles that lend support to the methods used and conclusions reached. With some modification, the research could be the basis for further study. Some of the appropriate methods and scientific design have been applied. The student researcher(s) are partially aware of the empirical method and the importance of controlling the variables in order to reach valid conclusions.	The problem is not stated. The student researcher(s) do not use scientific facts as a basis for new conclusions. The student researcher(s) are unaware of the basic scientific principles that lend support to the methods used and conclusions reached. The researcher cannot be the basis for further study. Inappropriate methods and a flawed scientific design have been applied. The student researcher(s) are unaware of the empirical method and do not recognize the importance of controlling the variables in order to reach valid conclusions.	30	<table border="0" style="margin-left: auto; margin-right: auto;"> <tr> <td style="border-top: 1px solid black; border-bottom: 1px solid black; width: 20px;"></td> <td style="text-align: center;">x 6</td> <td style="border-top: 1px solid black; border-bottom: 1px solid black; width: 20px;"></td> <td style="text-align: center;">=</td> <td style="border-top: 1px solid black; border-bottom: 1px solid black; width: 20px;"></td> <td style="text-align: center;">=</td> </tr> </table>		x 6		=		=						
	x 6		=		=												
Collaboration	There is clear evidence of collaboration. The student researcher(s) identified portions of the project representing the work of others.	There is lack of clear evidence of collaboration, or the student researcher(s) do not identify portions of the project representing the work of others.	There is lack of clear evidence of collaboration, and the student researcher(s) do not identify portions of the project representing the work of others.	15	<table border="0" style="margin-left: auto; margin-right: auto;"> <tr> <td style="border-top: 1px solid black; border-bottom: 1px solid black; width: 20px;"></td> <td style="text-align: center;">x 3</td> <td style="border-top: 1px solid black; border-bottom: 1px solid black; width: 20px;"></td> <td style="text-align: center;">=</td> <td style="border-top: 1px solid black; border-bottom: 1px solid black; width: 20px;"></td> <td style="text-align: center;">=</td> </tr> </table>		x 3		=		=						
	x 3		=		=												

Area	High Points 5-4 points	Medium Points 3-2 points	Low Points 1-0 points	Points Possible	Points Earned
Peer to Peer Collaboration	There is clear evidence of collaboration. Both team members are present. No points will be awarded if only one team member is present.	Some collaboration is evident. No points will be awarded if only one team member is present.	There is lack of evidence of collaboration. No points will be awarded if only one team member is present.	10	
Thoroughness/Information	Student researcher(s) clearly communicate the original plan and adaptations that may have been made to the study. Any adaptations made uphold the integrity of the study. Facts and principles the student researcher(s) state are correct and accurate. All results of the experiments are reported accurately based on methodology used. Any errors and weaknesses in the study are identified, if applicable.	Student researcher(s) partially communicate the original plan and adaptations that may have been made to the study. Any adaptations made may uphold the integrity of the study. Facts and principles the student researcher(s) state are partially correct and accurate. Most results of the experiments are reported accurately based on methodology used. Most errors and weaknesses in the study are identified, if applicable.	Student researcher(s) do not communicate the original plan and adaptations that may have been made to the study. Adaptations made do not uphold the integrity of the study. Facts and principles the student researcher(s) state are inaccurate. Results of the experiments are not reported accurately based on methodology used. Errors and weaknesses in the study are not identified.	30	$\frac{\quad}{\quad} \times 6 =$
Results/Conclusions	The student researcher(s) use known facts to draw conclusions. Conclusions are consistent with the data and/or observations presented. The student researcher(s) clearly share what was learned as a result of the research. The student researcher(s) effectively communicate the results and impact of the study.	The student researcher(s) use known facts to draw conclusions. Conclusions are inconsistent with the data and/or observations presented. The student researcher(s) ineffectively share what was learned as a result of the research. The student researcher(s) ineffectively communicate the results and impact of the study.	The student researcher(s) do not use known facts to draw conclusions. Conclusions are inconsistent with the data and/or observations presented. The student researcher(s) do not share what was learned as a result of the research. The student researcher(s) do not communicate the results and impact of the study.	15	$\frac{\quad}{\quad} \times 3 =$

Area	High Points 5-4 points	Medium Points 3-2 points	Low Points 1-0 points	Points Possible	Points Earned
Visual Display	The data is presented in the best manner for the particular type of information involved. No spelling errors are present. The exhibit demonstrates general neatness and attractiveness. The display is presented in a logical and interesting manner.	The data is presented in a logical manner for the particular type of information involved. Some spelling errors are present. The exhibit lacks general neatness and attractiveness. The display is presented in a logical yet uninteresting manner.	The data is not presented in a rational manner for the particular type of information involved. Several spelling errors are present. The exhibit lacks general neatness and attractiveness. The display lacks logic and appears uninteresting.	15	<hr style="width: 50px; margin: 0 auto;"/> x 3 = <hr style="width: 50px; margin: 0 auto;"/>
Total Score (120 points possible)					
<i>This constitutes 75% of the overall score to determine final ranking.</i>					

Appendix X

Types of Resources for Literature Reviews

Primary Sources

Primary resources contain first-hand information, meaning that you are reading the author's own account on a specific topic or event that s/he participated in. Examples of primary resources include scholarly research articles, books, and diaries. Primary sources such as research articles often do not explain terminology and theoretical principles in detail. Thus, readers of primary scholarly research should have foundational knowledge of the subject area. Use primary resources to obtain a first-hand account to an actual event and identify original research done in a field. For many of your papers, use of primary resources will be a requirement.

Examples of a *primary source* are:

- Original documents such as diaries, speeches, manuscripts, letters, interviews, records, eyewitness accounts, autobiographies
- Empirical scholarly works such as research articles, clinical reports, case studies, dissertations
- Creative works such as poetry, music, video, photography

Secondary Sources

Secondary sources describe, summarize, or discuss information or details originally presented in another source; meaning the author, in most cases, did not participate in the event. This type of source is written for a broad audience and will include definitions of discipline specific terms, history relating to the topic, significant theories and principles, and summaries of major studies/events as related to the topic. Use secondary sources to obtain an overview of a topic and/or identify primary resources. Refrain from including such resources in an annotated bibliography for doctoral level work unless there is a good reason.

Examples of a *secondary source* are:

- Publications such as textbooks, magazine articles, book reviews, commentaries, encyclopedias, almanacs

Academic Resources

Academic resources, such as journals, academic books, and dissertations, undergo a formal evaluation process before publication. The peer review process is used by most scholarly journals, such as the *New England Journal of Medicine*. This helps to ensure high quality information and accuracy of results. Peer reviewed simply means that the manuscript has been reviewed by experts in the field. Scholarly peer reviewed work and other published research (dissertations, scholarly books, etc.) attempt to add to the body of knowledge. That said, even though an scholarly article has been peer reviewed, it is still important that you critically evaluate it yourself, as some journals differentiate in acceptance standards.

Remember that most of your resources for University work should be scholarly RESEARCH articles. A scholarly journal has additional sections like any other journal: editorials, book reviews, news, letters, etc. These resources are not considered research articles, even though they are published in a scholarly/peer reviewed journal. You will want to make sure that you are focusing your efforts primarily on the original, research-based articles.

Characteristics of scholarly studies:

- Reference/bibliographic list
- Defined research question(s)
- Qualitative, quantitative, or mixed research method
- Sample(s) gathered from population
- Uses of measurement instrument to gather data
- Literature review
- Inferences made from findings
- Usually more than a single author
- Scholarly, academic language

- High page count
- Tables and figures of findings

Popular Resources

Popular resources do not typically go through the same review process as academic resources; in many cases popular resources are reviewed by a single editor, who may or may not have expertise in the subject area. Popular resources are usually written for a broad audience and do not always use the same, formal language as authors of academic articles.

Examples of popular resources include magazine and newspaper articles, websites, and wikis. Use popular resources to identify the latest trends and issues within your topic, but do not rely heavily on these types of resources.

Characteristics of popular source articles:

- Uses short sentences and simple language
- Author reports information from interviews or second hand sources
- Sometimes the author is not listed or qualifications are not indicated
- Bibliography or references usually not included
- Usually illustrated with colorful photographs

Trade Publications

Trade publications are neither considered academic or popular; they are resources written for those who work in a specific industry. These publications tend to publish news, statistics, trends and other information relevant to their industry. Authors can be staff editors, journalists, practitioners or academics in the field. They may be published by trade or professional associations. Articles may be short and may not include references, or not nearly as many references as scholarly journal articles.

Examples of trade publications include:

AdWeek

The Chronicle of Higher Education

Engineering News Record

Management Today

Sources: <https://ncu.libguides.com/researchprocess/primaryandsecondary>