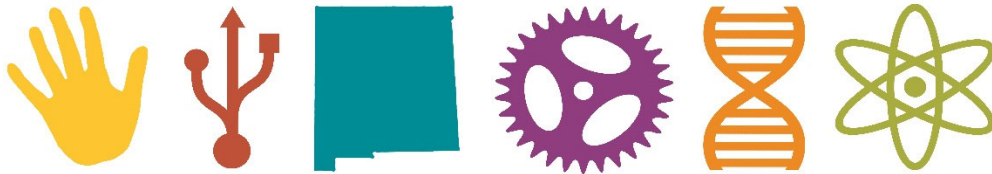


Inquiry-Based Student Research Project Rules & Forms

for Elementary Students

K-5

**Central New Mexico
STEM Research Challenge**



UNM STEM-H Center

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K-5 Research Projects Quick Rules Guide

The following rules and forms are based on the [International \(ISEF\) Rules for Pre-College Science Research](#) but have been simplified for elementary use. As an ISEF Affiliated Fair, the Central New Mexico STEM Research Challenge (CNM-STEMRC) enforces the use of safe research practices for all participants at all levels and must adhere to the safety guidelines provided by ISEF. Accordingly, **Adult sponsors of elementary research projects should be familiar with the complete ISEF rules especially in the areas listed below and consult with the STEM-H Center if unsure whether a proposed student project is suitable for elementary level competition.** Note: the CNM-STEMRC does impose certain restrictions on elementary research that are otherwise allowable for middle/high school research under the ISEF rules (as noted below in red).

HUMAN SUBJECTS

- Human subjects projects **must be reviewed** and approved by an Institutional Review Board before experimentation begins.
- **Human Participants studies are ones that involve living individuals where there is intervention or interaction of any kind with subjects &/OR collection of identifiable private information.**
- **Only projects that involve no more than minimal risk to participants are acceptable for elementary research. Types of risk include:** 1) physical 2) psychological and 3) breach of confidentiality/invasion of privacy. **No more than minimal risk is defined as:** *The probability & magnitude of harm/discomfort anticipated in the research are NOT GREATER (in & of themselves) than those encountered in everyday life or during performance of routine physical/psychological exams or tests.* Projects that are determined to be higher than minimal risk will not be approved for competition at the elementary level.
- Informed consent (signed forms) **must** be obtained for all human subjects used in research projects. Signed consent forms must be kept confidential and stored in a secure location to protect participants' privacy.

VERTEBRATE ANIMALS

- Research **must be reviewed** and approved by the CNM-STEMRC Scientific Review Committee before experimentation begins.
- Alternatives to the use of vertebrate animals for research **must** be explored.
- All animals **must** be legally acquired from reputable animal breeders or dealers. **The use of wild animals will not be permitted for research projects at the elementary level.**
- Proper animal care must be provided daily. Documentation of care is recommended.
- **Elementary level students may NOT conduct vertebrate animal research involving alteration of normal diet.** Projects involving supplementation (ex: treats, vitamins, etc.) **MUST** have a veterinarian's approval. Any changes, no matter how subtle, to an animal's normal diet can have significant negative consequences.
- Experimental procedures that cause unnecessary pain or discomfort are prohibited.
- Experiments designed to kill vertebrate animals are **NOT** permitted. Students may **NOT** perform euthanasia.
- Alcohol, acid rain, insecticide, herbicide, and heavy metal toxicity studies are **PROHIBITED**.

POTENTIALLY HAZARDOUS BIOLOGICAL AGENTS (PHBAs)

- Microorganisms (bacteria, molds, fungi, viruses, etc.) collected, isolated, and/or cultured from any environment are considered to be potentially pathogenic and **MUST** be done in an appropriate laboratory setting (never at home). **Consequently, any PHBA study requiring prior approval per the ISEF rules are NOT appropriate for elementary students and will not be approved for competition.**

PROJECTS **NOT** RECOMMENDED FOR ELEMENTARY STUDENTS

The following areas of research are permitted under ISEF rules, but are **NOT** recommended at the elementary level. If students insist on conducting their research in any of these areas, they **MUST** consult and comply with the applicable ISEF rules.

These projects also require a completed Form 4 Risk Assessment.

- Research that utilizes **controlled substances** (including prescription drugs, alcohol, tobacco)
- Research involving **hazardous substances or devices** (including hazardous chemicals, radioactive materials, firearms, carcinogens, explosives, paintball/airsoft guns, rockets, pesticides, etc.)
- Research involving **PHBAs and/or tissues that are exempt from prior approval per the ISEF rules** (see page 17 of ISEF rules)

K-5 Research Projects Form Information

The Elementary Division (grades 4-5) of the Central NM STEM Research Challenge (CNM-STEMRC) requires the use of specific forms simplified for elementary use based on the forms required of students in the Junior/Senior Divisions of International Science and Engineering Fair (ISEF) affiliated student research competitions. If the nature of the research or safety/ethics are questionable, the CNM-STEMRC Scientific Review Committee will **NOT** approve the project for competition.

FORMS 1 and 1A – APPROVAL & RESEARCH PLAN FORMS

All projects are required to have an Approval and Research Plan Form. The approval form requires the signature of the **classroom teacher** and at least **one parent or guardian**. It is recommended that at least one other person from the school (another teacher, science fair committee chair, etc.) review projects as well. Reviewing all projects **before they begin** will eliminate many disqualification questions and concerns. The Research Plan form is also an important tool for students and reviewers. A well written and executed research plan will not only result in good, reliable science but will also help to identify any potential issues with the methods and/or potential violations of the rules.

FORMS 2 & 2B – HUMAN SUBJECTS FORMS

If research involves the use of human participants, **PRIOR approval by an Institutional Review Board is required.** A school can set up its own review committee if at least one adult from the school has completed the STEM-H Center’s “Research Challenge Bootcamp.” **IF YOUR SCHOOL DOES NOT HAVE A COMMITTEE, HUMAN SUBJECTS PROJECTS MUST BE SENT TO THE CNM-STEMRC FOR PRIOR REVIEW AND APPROVAL.** These projects require **PRIOR approval and informed consent** from all participants. Use Forms 2 & 2B - Human Subjects Forms to obtain these approvals.

FORM 3 – VERTEBRATE ANIMAL FORM

This form is required for projects that intend to safely investigate/test vertebrate animals (usually pets). Elementary students **cannot** conduct any experimentation on wild animals. The intention of the form is primarily for typical domesticated pets. **THESE PROJECTS MUST BE REVIEWED AND APPROVED BY THE CNM-STEMRC Scientific Review Committee BEFORE THE EXPERIMENT BEGINS** or the project will not be accepted for competition. Use Form 3 – Vertebrate Animal Form to obtain these approvals.

FORM 4 – RISK ASSESSMENT FORM

This form is required for projects that involve hazardous or dangerous chemicals, activities or devices. Examples include controlled substances, PHBAs and tissues exempted from prior approval, flammable or corrosive chemicals, open flames, explosives, firearms or other weapons, use of unfamiliar tools and other activities not usually conducted in day-to-day life. This is not an exhaustive list, if you are unsure about a material or activity, it’s best to complete a risk assessment and/or contact the CNM-STEMRC office. **Prior approval is not required, HOWEVER, direct supervision by an adult is REQUIRED and ONLY the adult should handle and dispose of the materials.**

FORM 5 – ABSTRACT ELEMENTARY FORM

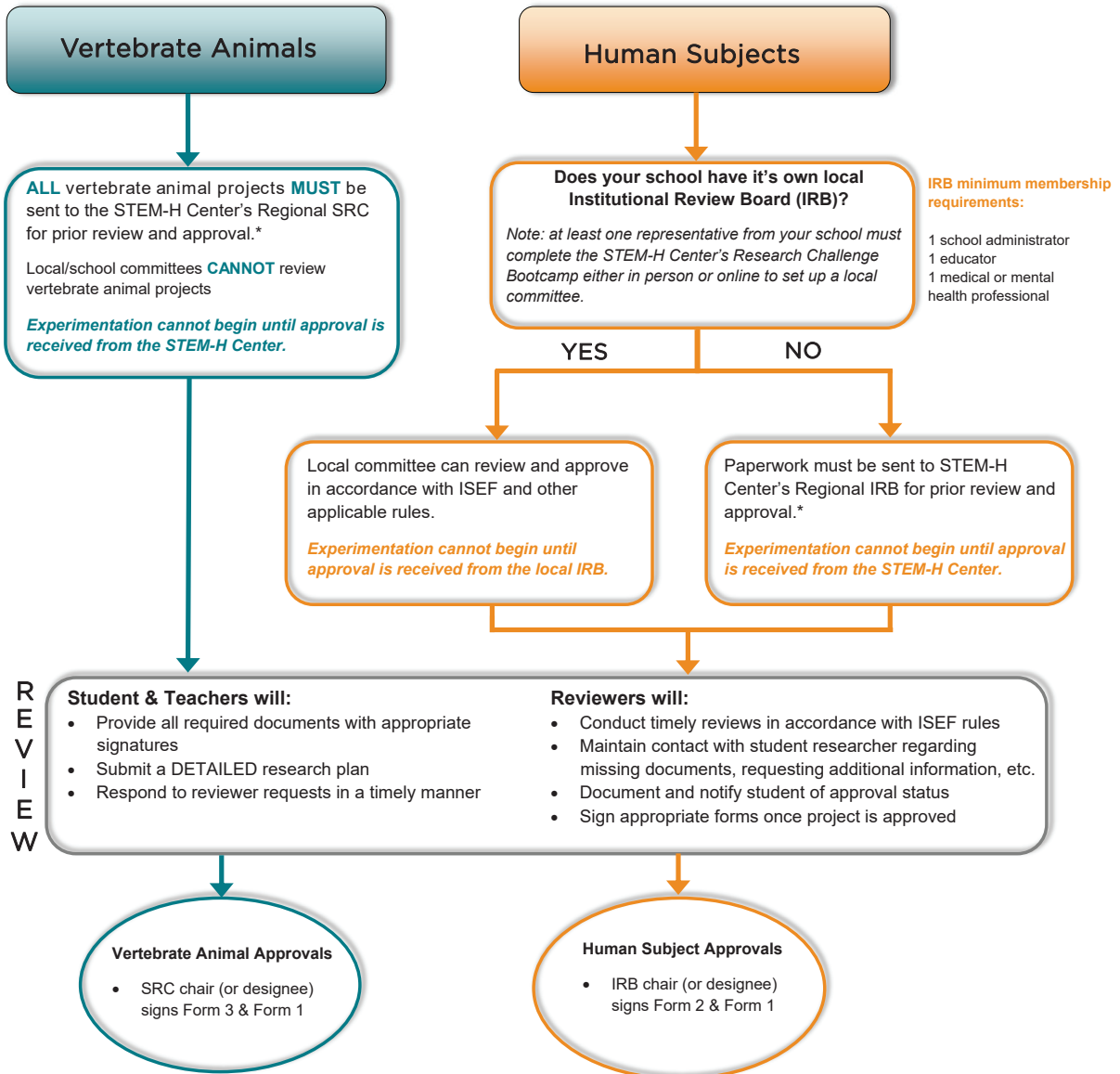
Abstracts are required from all student participants and will be entered directly into the online registration.

Central New Mexico STEM Research Challenge

Prior Review & Approval Process Flowchart

for Elementary Division (grades 4-5)

UNM STEM-H Center
 505-277-4916
scifair@unm.edu
stemed.unm.edu



REVIEW

Student & Teachers will:

- Provide all required documents with appropriate signatures
- Submit a DETAILED research plan
- Respond to reviewer requests in a timely manner

Reviewers will:

- Conduct timely reviews in accordance with ISEF rules
- Maintain contact with student researcher regarding missing documents, requesting additional information, etc.
- Document and notify student of approval status
- Sign appropriate forms once project is approved

Vertebrate Animal Approvals

- SRC chair (or designee) signs Form 3 & Form 1

Human Subject Approvals

- IRB chair (or designee) signs Form 2 & Form 1

Potentially Hazardous Biological Agents (PHBAs)

Studies involving PHBAs that require prior approval must be done in an appropriate laboratory setting and therefore are not appropriate for elementary students.

The Central NM STEM Research Challenge will not approve these projects for elementary level competition.

* Current year deadline for STEM-H Center to receive prior approval paperwork: **November 20, 2023**

The Central NM STEM Research Challenge reserves the right, at any time in the process, to disqualify a project from competition for failure to comply with ISEF Rules for Pre-College Research.

K-5 Research Project Checklist

Please **include** this form as the first page of each project packet.

DEADLINES:

November 20, 2023: Prior Approval Deadline*

**February 7, 2024: Online Entry Deadline,
all Paperwork & Entry Fee (\$30.00/student) due**

*Prior Approval Deadline refers only to those projects that need review and approval from the STEM-H Center's regional SRC/IRB. Refer to flowchart found in this packet to determine which projects need approval and by whom.

Form

Form Name

- Form 1 Approval Form (**required for EVERY project**)
- Form 1A Research Plan (**required for EVERY project**)
- Form 2 Human Subjects Form for Approval PRIOR to Experimentation
- Form 2B Human Subjects Form for Informed Consent/Permission
- Form 3 Vertebrate Animal Form for Approval PRIOR to Experimentation
- Form 4 Risk Assessment
- Abstract (**required for EVERY project**)
- Media Release/Medical Information Form (**required for EVERY student**)

Note: this form is not included in this packet but can be found on the STEM-H Center [website](#).

Please **PRINT** below (projects may only have **3** representatives per project present at judging)

1st Student Name: _____

2nd Student Name: _____

3rd Student Name: _____

Teacher Name: _____

School: _____ **Grade Level:** _____

This is a/an (please check ONE):

INDIVIDUAL PROJECT

TEAM PROJECT

CLASSROOM PROJECT

K-5 Form 1 Project Information & Approval

Project Information

This form is required for ALL projects.

Title of Project: _____

Teacher Name: _____ E-Mail: _____

School: _____ Grade: _____

Student 1 Name: _____

Student 2 Name: _____

Student 3 Name: _____

Project Start Date: _____ Project End Date: _____

NOTE: start date MUST be AFTER all approval dates at the bottom of this form

This project was conducted at:

School Field Home Other: _____

The following projects require additional forms and possible approval by a local or regional committee (see flowchart above for more detail)

Check **ALL** items below that apply to your research.

- Human subjects research **requires PRIOR approval** with Form 2 and 2B
- Nonhuman vertebrate animals research **requires PRIOR approval** with Form 3
- Use of potentially hazardous materials/chemicals/devices **requires** Form 4

Approval Signatures

Required for ALL projects.

APPROVAL SIGNATURES

Classroom Teacher: _____ Date: _____

Parent 1/Guardian 1: _____ Date: _____

Parent 2/Guardian 2: _____ Date: _____

If PRIOR APPROVAL is required (see above), the following signature is needed BEFORE the project can begin.

Committee Chair: _____ Date: _____

K-5 Form 1A Research Plan

This form is required for ALL projects. Use additional pages if necessary.

Title of Project: _____

Student Name(s): _____

Research Question/Engineering Goal:

Hypothesis/Expected Outcome:

Procedures:

Data Analysis (what data are you collecting? how will you evaluate your data to know if your hypothesis was correct or your outcomes achieved?)

Potential Risks/Safety Concerns? What precautions will you take if necessary?

K-5: Form 2 Human Subjects Form

This form is REQUIRED for ALL projects involving human subjects. Use additional pages if necessary.

Title of Project: _____

Student Name(s): _____

Human Subjects Information: *(use additional pages if necessary)*

A) Who will be participating in your project? (number, age, gender) Where will you recruit them?

B) What will participants be asked to do?

C) Are there any risks or potential discomforts to participants? How will you minimize them?

D) Describe the benefits of this research:

E) Will personal information be recorded (i.e. names, ages, genders, etc.) YES NO
If yes, you CANNOT include any identifiable information in your paper, board, final work products. It is very important that the identities of participants remain confidential.

F) Are you using a survey, questionnaire, or test? YES NO
If yes, include a copy with your paperwork.

To Be Completed by IRB Committee Chair OR Designee

The project as described is:

- Acceptable, you may begin your project
- Informed Consent Form 2B needed for ALL Participants
- Not Acceptable/Unsafe (Project must be revised.)

Committee Chair/Designee: _____ **Date:** _____

K-5: Form 2B Informed Consent/Permission

K-5 Form for INFORMED CONSENT/PERMISSION to Participate in HUMAN SUBJECTS Research

A completed consent form is required for each participant. If minors are participating, parents are required to give their permission. If a survey is being used, attach to this consent form so parents can review before signing.

Title of Project: _____

Student Name(s): _____

I/We will be conducting a research experiment for this year's science expo. I am asking for your/your child's voluntary participation in my project.

My/our human subjects will be asked to do the following *(describe, in detail, what the participants will be doing):*

Potential Risks of Study:

Benefits of Study:

If you have any questions about this study, you may contact:

Adult Sponsor: _____ Email: _____

To Be Completed PRIOR to Experimentation

- I have read and understand the project stated above and give consent for myself/ my child to participate in this research project.
- I understand that this consent is voluntary and can be withdrawn at any time.
- I consent the use of visual images (video, photos) involving my/ my child's participation in this research project *(optional) Participant identities will otherwise remain confidential.*

Participant's Name: _____ Date: _____

Participant Signature: _____

Parent/ Guardian Signature (if applicable): _____

K-5: Form 3 Vertebrate Animal Form

K-5 Form for Prior Approval of VERTEBRATE ANIMAL Research Projects

This form is REQUIRED for ALL research involving non-human vertebrate animals (please use additional pages if needed)

K-5 students CANNOT test wild animals, but may do purely observational studies (ex: bird counts, etc.) with permission of the Science Expo Committee.

Title of Project: _____

Student Name(s): _____

1) Type and number of animals to be used: _____

2) The following alternatives to the use of vertebrate animals have been explored: _____

3) Where will animal(s) be obtained? _____

4) Cage size: _____ Number of animals per cage: _____

5) Type/Brand of Food: _____

6) How often fed and given water? _____ How much food? _____

7) Where does the animal(s) live (*inside, outside, combination*)? _____

8) Describe ***in detail*** the procedures as related to animal involvement (continue on separate page if needed):

Consent for pet use by owner:

I have read and understand the project stated above and give consent for my pet to participate in this research project. I will supervise all interaction for the safety of my pet and student researcher.

Name of Adult Pet Owner: _____

Pet Owner Signature: _____ Date: _____

To Be Completed by SRC Chairperson OR Designee

The project as described is:

- Acceptable, you may begin your project
- Acceptable, but get OK from Vet (*Bring note from Vet saying project is not going to harm the animal(s) AND that he/she will provide emergency medical care if needed.*)
- Not Acceptable/Unsafe; project must be revised.

Committee Chair/Designee: _____ Date: _____

K-5 Form 4 Risk Assessment

*This form is required for projects involving hazardous chemicals, activities, or devices.
Use additional pages if necessary.*

Title of Project: _____

Student Name(s): _____

List all hazardous chemicals, activities or devices that will be used:

Identify and assess the risks involved in this project:

Describe the safety precautions and procedures that will be used to reduce the risks:

Describe the disposal procedures that will be used (when applicable):

List the source(s) of safety information:

To be completed and signed by a designated supervisor (*i.e. adult directly supervising the project*)

I agree with the risk assessment and safety precautions and procedures described above. I certify I have reviewed the Research Plan and will provide direct supervision.

Designated Supervisor's Printed Name

Signature

Date

Abstract

ABSTRACTS are required for all projects.

Students will be provided copies of their abstract to give to judges. See box below.

A Good Research Project Abstract...

- ✓ Follows the format of the scientific method.
- ✓ Is written in the 3rd person.
- ✓ Assumes scientists are the audience.
- ✓ Uses complete but concise sentences.
- ✓ Uses present tense for the existing body of facts.
- ✓ Uses past tense for the completed research.
- ✓ Defines specialized terminology and abbreviations.
- ✓ Is 50 to 250 words long.
- ✓ Is typed neatly, single spaced using 12 point font size and an easily readable font.
- ✓ Has 1" to 1.5" margins.

What's In a Good Research Project Abstract?

- ✓ Write a sentence making broad statement about the topic of research.
- ✓ Write the next sentence or two focusing more narrowly on the particular intent of the research.
- ✓ Write several sentences indicating the problem to be solved and the hypothesis that was posed.
- ✓ Write a very brief statement to describe the methodology employed (*This may be omitted if space or time is short*).
- ✓ Write several concise statements indicating which variables were explored and compared and if the data obtained supported the hypothesis. These sentences summarize the results and discussion sections of the research paper.
- ✓ Write a sentence that gives the conclusion(s) of the research work and a statement of the direction for future research.
- ✓ Count the number of words for the sentences you just wrote. If you need to, edit your sentences to bring your abstract within the required 50- 250 word count.
- ✓ Put all previous sentences in paragraph form.
- ✓ Be sure to check your spelling AND grammar. Remember, you may soon have judges reading your work!! You might even want to have your teacher and/or a classmate review your abstract for you.

The body of the abstract should be no more than 250 typed words. The abstract is a summary/synopsis of your project. Including specific detailed data is not necessary. However, you do want the reader to fully understand your project. The abstract should be written once the project is complete. Do not include references or bibliography in the abstract.

IMPORTANT: Students will type or copy/paste the abstract into the online entry form when registering for the Central New Mexico STEM Research Challenge