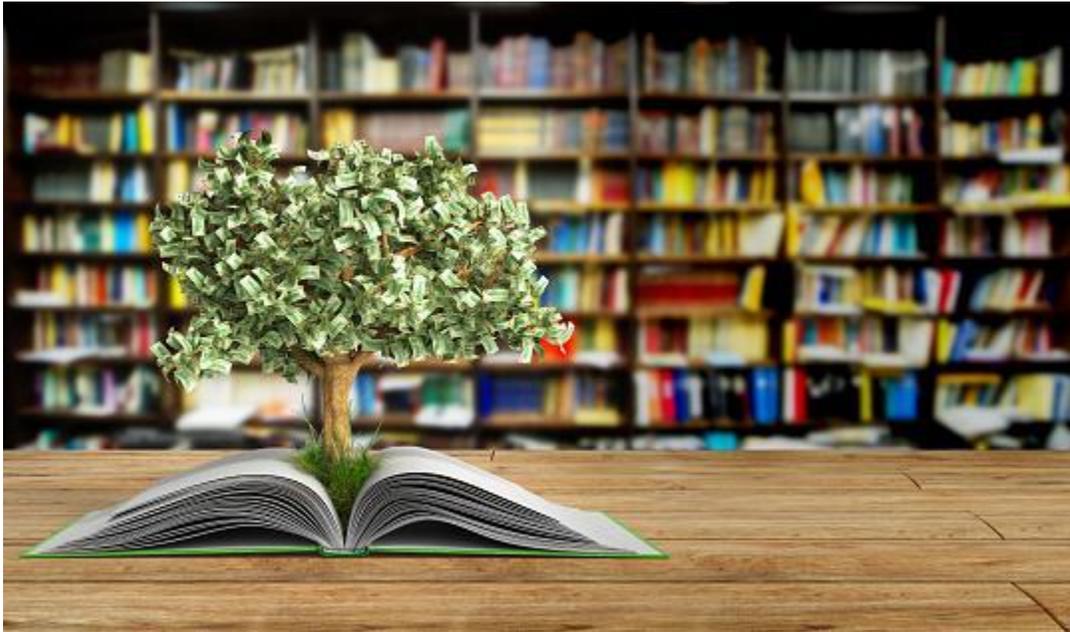


# Introduction

## Welcome Message



Welcome to the *Gifted/Talented Teacher Toolkit* !! The Texas Education Agency (TEA) has compiled these resources to help you teach research skills to your students. The toolkit includes links to websites and documents that provide background information on knowledge formation, specific resources for the four core content areas, tips for differentiating instruction for Gifted/Talented (G/T) learners, techniques for conducting research, and sample scope and sequence documents.

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### i. Purpose of the Toolkit

This toolkit is meant for teachers of Gifted/Talented (G/T) students who want to ensure that students undertake professional research and develop high-quality products in concordance with the *State Goal for Services for Gifted/Talented Students*. Schools should use G/T education in grades K-8 as a formative experience—the knowledge, skills, and processes practiced and acquired at this level will lead to the development of more complex and sophisticated student products in the upper grades. G/T education in grades 9-12 should reflect professional-level processes and performances. As educators, we need to consider how we can move G/T students from those early formative experiences to become developers of creative, unique, and advanced products. The Texas Education Agency (TEA) hopes that this toolkit can help you in this journey.

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## ii. How to Use the Toolkit

The toolkit was developed for use on computers running current versions of Windows and Macintosh OSX operating systems and requires the free Flash Player browser plugin for proper display. The most recent Flash Player can be downloaded from <http://get.adobe.com/flashplayer/>. Additionally, some features require the Adobe Acrobat PDF Reader software, which can be downloaded for free from <http://www.adobe.com> if not already installed on the computer. Additionally, for optimal viewing, the recommended display settings are a resolution of 1024 x 768 or higher.

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## **iv. Acknowledgements**

We would like to thank all of the regional Education Service Center Gifted/Talented (G/T) specialists for their work with G/T educators and their contributions to this toolkit. We would especially like to acknowledge the efforts of Dr. Cecelia Boswell and Doris Teague for their contributions to the toolkit, and Jim Coffey, retired Region 15 G/T Specialist, for his leadership and vision in compiling these resources.

In the development of this toolkit, we have relied on a variety of valuable experts and resources. Every effort has been made to give sources proper credit. If any sources were omitted, please notify us for acknowledgements in future publications.

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## **v. Contact Information**

For additional information, contact your regional Education Service Center Gifted/Talented specialist (see [http://tea.texas.gov/regional\\_services/esc/](http://tea.texas.gov/regional_services/esc/) or Monica Brewer, Statewide Coordinator of Gifted/Talented Education, at [monica.brewer@tea.texas.gov](mailto:monica.brewer@tea.texas.gov) or [gted@tea.texas.gov](mailto:gted@tea.texas.gov)).

# Teaching Research Skills to Gifted/Talented Students



Gifted/Talented students require differentiation and special instruction in the areas of content knowledge, product development, and research processes. The links in this section provide information on learning theory, content knowledge, product development, and research processes.

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## A. Learning Theory

This section of the toolkit provides some background research on how Gifted/Talented students learn and how to encourage students to use advanced thinking processes. See the links below for more information on the learning theory work of Bloom, Bruner, and Kaplan.

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### i. Bloom's Taxonomy

Bloom's Taxonomy is the most common method of expanding thinking skills. Bloom's Taxonomy is a classification model organized by complexity, and the levels include knowledge, comprehension, application, analysis, synthesis, and evaluation. The websites listed below provide resources on Bloom's Taxonomy.

1. [Basic Bloom's Information and Three Types of Learning](#)

2. [Applying Bloom's Taxonomy \(Task Oriented Question Construction Wheel\)](#)
  3. [Bloom's Question Stems](#)
  4. [Bloom's and Gifted Students](#)
  5. [Bloom's Revised Taxonomy](#)
  6. [Revised Bloom's Taxonomy Question Starters](#)
  7. [A Model of Learning Objectives Based on Revised Bloom's Taxonomy](#)
  8. [Bloom's and Assessment](#)
- 

## ii. Bruner's Discovery Learning

Jerome Bruner, a constructivist and learning theorist, developed the theory of Discovery Learning. Discovery Learning is an inquiry-based learning method in which Bruner asserts that student learning is an active process and a hierarchical one. Students' new learning experiences should build on their current knowledge, and students are more likely to engage in meaningful learning if they discover concepts on their own. The websites listed below provide resources regarding Bruner's Discovery Learning.

1. [Principles of Bruner's Theories](#)
  2. [Bruner and the Process of Education](#)
- 

## iii. Kaplan's Scholarly Behaviors

Sandra Kaplan is a respected researcher in the field of Gifted/Talented education. Kaplan has developed a set of scholarly behaviors (e.g., asking questions, using many tools and resources) and outline of what teachers and students who exhibit scholarly behaviors look like. The websites listed below provide resources regarding Kaplan's work.

1. [Kaplan's Scholarly Behaviors](#)
  2. [Elements of Depth and Complexity](#)
- 

## iv. Differentiating Instruction

Differentiating instruction allows teachers to provide specialized instruction for Gifted/Talented (G/T) students within the regular classroom. It is a method of individualizing instruction to meet the needs of all students—students who are identified as G/T and other students as well. When teachers differentiate, they assign G/T students different tasks that lead to learning that is meaningful for them. Differentiation for G/T students should focus on production, allowing students to exhibit their learning through abstract and concrete products. Some books that might be particularly helpful tools for teachers include:

- Tomlinson, C. A., Kaplan, S. N., Renzulli, J. S., Purcell, J., Leppien, J., & Burns, D. (2002). *The parallel curriculum: A design to develop high potential and challenge high-ability learners*. Thousand Oaks, CA: Corwin Press, Inc.
- Winebrenner, S. (2001.) *Teaching gifted kids in the regular classroom*. Minneapolis, MN: Free Spirit Publishing, Inc.

The websites listed below provide resources for differentiating instruction.

1. [How to Adjust Teaching Styles to Learning Styles](#)
2. [Step by Step: Planning for Differentiated Instruction](#)
3. [Multiple Menu Model of Differentiation](#)
4. [Layered Curriculum Sample Lessons—Across Grade Levels and Content Areas](#)
5. [Curriculum Differentiation: An Overview](#)
6. [Electronic Resources for Differentiating Instruction](#)
7. [Compacting Form](#)

## B. Content Knowledge



Content consists of the facts, concepts, and principles that govern a body of study. The following are some ways to differentiate content for gifted/talented learners:

- **Pacing** is modification of the rate at which students advance through the content. Some examples of pacing include allowing the gifted student to
  - learn or become familiar with new content knowledge early, and
  - perform more in-depth and longer explorations of specific topics.

- **Enrichment** is an elaboration on the basic concepts taught in the regular education program. Some examples of enrichment include allowing students to
  - reason from concrete to abstract, familiar to unfamiliar, and known to the unknown;
  - explore the discipline by going beyond memorization of facts and concepts into exploring generalizations, principles, theories, and laws; and
  - investigate the many layers within a discipline through details, patterns, trends, unanswered questions, and ethical considerations.
  
- **Sophistication** is access to a larger system of ideas and concepts related to the basic content knowledge. Some examples of sophistication include allowing students to
  - extend content within, between, and across disciplines through the study of themes, problems, and issues;
  - discover relationships between and among ideas; and
  - examine relationships from multiple points of view.
  
- **Novelty** is exposure to completely different material than any material in the regular curriculum. Some examples of novelty include allowing students to
  - develop relevant and individualized meaning of unique concepts and themes;
  - express ideas in original, creative ways; and
  - provide students with a completely original curriculum.

Listed below is a sample of resources for instruction in the four core content areas. There are many other good resources available on the Internet—for all content areas and all grades levels.

#### English Language Arts

- [A Lesson Plan Bank for English Language Arts](#)

#### Mathematics

- [Teacher Resources for Advanced Mathematics](#)

#### Science

- [Differentiated Elementary Science Lessons](#)

#### Social Studies

- [Teaching and Learning in the Social Studies](#)

## C. Product Development



Products are ways for students to communicate what they have learned through the synthesis and application of knowledge, concepts, and skills. In their product development, gifted/talented students should challenge existing ideas and construct original ideas, techniques, and materials. Students in the lower grades will need more teacher guidance in the product development process; however, high school students should be largely independent and reflect the work of professionals in the field. Examples of professional products include 1) the use of writing skills to produce technical documents and proposals, and 2) the use of research skills to investigate, experiment, and then present findings to a committee of professionals.

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### i. Developing Advanced Products

Advanced products that gifted students develop should reflect professional quality, address meaningful problems, be based on information from a variety of sources, and include self-evaluation and peer-evaluation. The websites listed below are some good resources for developing advanced products.

1. [Texas Performance Standards Project Tasks](#)
  2. [Student Products as the Link between Schools and Communities](#)
  3. [How To Develop New Products—The SCAMPER Technique](#)
-

## ii. Preparing and Making Oral Presentations

Part of the learning process for gifted/talented students should be sharing their findings with others. The websites listed below are some good resources for developing oral presentations.

1. [Understanding Communication Skills](#)
2. [Ten Simple Rules for Making Good Oral Presentations](#)
3. [Making Effective Oral Presentations, including a checklist](#)
4. [Making PowerPoint presentations](#)
5. [Managing Nervousness](#)
6. [How to Design an Effective Presentation](#)

## D. Research Processes



Research skills relate to the student's chosen subject or course of study. Processes include, but are not limited to, content area knowledge, creative and critical thinking skills, research skills, and attitudes toward learning. Programs for gifted/talented students should include instruction in those process areas.

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## i. Conducting Quantitative Research

Quantitative research is a way to study relationships through the numerical representation of information. This might include assessment scores, income levels, or survey responses. Quantitative research aims to link pieces of information through the use of numbers. Pieces of

data are collected through structured sources such as surveys, lists of classroom test scores, or existing databases created by large organizations such as state education agencies or the census bureau.

Quantitative analysis can be either descriptive or inferential. Descriptive analysis means that the data are summarized and presented as a description of the population or sample of people or things. Inferential analysis means that inferences about the results of the analysis on the sample can be made to the larger population. Charts and tables are often used to present the correspondence between two or more pieces of information.

Samples are often used because an entire population is too large to study, and so a smaller group of subjects is chosen to represent the population. Thus, a survey might be given to a sample of one-fourth of the students in a school, or the test scores from a sample of one class at each grade level might be analyzed, rather than using all the students (the population) of the school. In a case where a sample is used, it is important that the sample be representative of the population, and if inferences about the population are to be made, the sample must be large.

Here is a website that further explains quantitative research:  
<https://libguides.usc.edu/writingguide/quantitative>

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## **ii. Conducting Qualitative Research**

Qualitative research is a way to study people or systems by interacting with and observing them. Qualitative research strategies include observations, interviews, focus groups, and document review. Sometimes data can be interpreted both qualitatively and quantitatively. Qualitative research relies heavily on written or spoken narrative information from observations of, or conversations with, one or more subjects. Because the data collection is so time-consuming, the sample, or number of subjects, is usually small. The data gathered are often rich, detailed and unique to the persons or things involved in the study. Qualitative research can thus provide a more complex picture of the research subjects. Qualitative research on a sample of subjects is seldom used to make inferences about a larger population because of the small sample size.

Qualitative data are reported in a descriptive manner and are often summarized with important points reiterated. Alternatively, a narrative can be coded for certain words or points that are of interest to the researcher, and descriptions of the coded data presented in charts or tables.

Here is a website that further explains qualitative research:  
<https://libguides.usc.edu/writingguide/qualitative>

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### iii. Combining Quantitative and Qualitative Research, or Using Mixed Methods

Whether a student uses quantitative or qualitative methods depends on the research questions and how the data are analyzed. Many research projects combine qualitative and quantitative research. A researcher might be interested in the favorite color of students in a school. The researcher would choose a sample of students that is representative of the school. If classes are not ability grouped, this could be one class at each grade level. Quantitative data may be gathered through a survey, asking the students in the sample classes what their favorite color is. Qualitative data could be included to support the results of the survey through a subset of the survey participants selected for interviews to provide more detailed information about what shade of the particular color they like best, why they chose that particular color, etc. The quantitative results would be presented as a bar chart showing the number of students (y axis) choosing each color (x axis). The qualitative results would be presented in a narrative summary of the interviews.

An Overview of Mixed Methods Research  
[semanticscholar.org](https://www.semanticscholar.org)

Sewanhaka Central High School District has created a step-by-step research guide for students located at:  
<https://www.sewanhakaschools.org>

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### iv. Basic Research Skills



The Texas Essential Knowledge and Skills (TEKS)—throughout all grades— outline research expectations for students. Students need to be able to perform such tasks as asking questions, using multiple resources, analyzing information, and drawing conclusions. This document shows a suggested scaffolding of TEKS research skills across the elementary, middle, and high school levels. This suggested scaffolding emphasizes the growing ability of gifted/talented students to conduct indepth research independently. The chart includes optional student and teacher responsibilities and teacher considerations. [A Suggested Scaffolding of Research Skills \(PDF\)](#)

## Additional Research Resources

Some websites that are resources for developing and asking questions include:

1. [A Questioning Toolkit](#)
2. [Asking Questions to Improve Learning](#)

Some websites that are resources for note taking include:

1. [Skills for Taking Notes in Class](#)
2. [Note-taking Methods](#)
3. [Lesson Plans for Teaching Note Taking](#)
4. [How To Paraphrase](#)
5. [Quoting, Paraphrasing, and Summarizing](#)
6. [Tools and Techniques for Organizing Information](#)

Some websites that are resources for primary and secondary sources include:

1. [Primary Versus Secondary Sources](#)
2. [Finding Primary Sources](#)
3. [Distinguishing Between Primary and Secondary Sources](#)
4. [Identifying Primary, Secondary, and Tertiary Sources](#)
5. [United States National Archives](#)

Some websites that are resources for evaluating sources include:

1. [Evaluating Sources of Information](#)
2. [Critically Analyzing Information Sources](#)
3. [Critical Evaluation of Resources](#)
4. [Evaluating Information Found on the Internet](#)
5. [Evaluation Criteria](#)

Some websites that are resources for developing research proposals include:

1. [How To Write a Research Proposal](#)
2. [Proposal Development Guides](#)
3. [Writing Tools for Non-Profits](#)
4. [Short Course on Proposal Writing](#)

Some websites that are resources for using graphic organizers include:

1. [Learning Resources: Graphic Organizers](#)
2. [Printable Graphic Organizers](#)
3. [PDF Graphic Organizers](#)
4. [Matrix of Graphic Organizers](#)
5. [Five Types of Graphic Organizers](#)
6. [Thinking Maps](#)

Some websites that are resources for documenting and citing sources include:

1. [Resources for Documenting Sources](#)
2. [Assembling a Works Cited List](#)
3. [Sources](#)
4. [How To Cite Electronic Sources](#)
5. [Citation Generator](#)

Some websites that are resources for writing a research paper include:

1. [Guide to Grammar and Writing](#)
2. [Writing a Research Paper](#)
3. [Research & Writing](#)
4. [Technical Writing](#)

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## v. Models of Inquiry

Gifted/talented students should use inquiry techniques to generate ideas about a topic, issue, or question. Some models include using creative problem solving, inquiry processes, and/or advanced thinking skills. These processes include understanding what the student already knows about the topic, discovering the known facts about the topic, brainstorming ideas about the topic, synthesizing and evaluating information, and establishing conclusions.

Some websites that are resources for creative problem solving include:

1. [Creative Problem Solving](#)
2. [Steps in Creative Problem Solving/Decision Making](#)
3. [Solving Open-ended Problems](#)

Some websites that are resources for inquiry processes include:

1. [Methods of Inquiry](#)
2. [Science Teaching and Inquiry](#)
3. [Inquiry Models of Teaching](#)

4. [Thinker Tools Inquiry Curricula](#)
5. [Cultural Inquiry Process Steps](#)
6. [Foundations of Inquiry](#)

Some websites that are resources for advanced thinking skills include:

1. [Strategies for Teaching Thinking and Promoting Intellectual Development](#)
2. [Habits of Mind](#)