

Enrichment Clusters: A Practical Approach For Developing Investigative Learning Skills

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Background

The enrichment cluster concept described in this chapter is based on a learning theory for developing giftedness and creativity called the Enrichment Triad Model (Renzulli, 1977). It is also based on an organizational plan called the Schoolwide Enrichment Mode (SEM) (Renzulli & Reis, 1985). This plan deals with other enrichment services used in gifted education programs and general school improvement strategies. Research on the SEM and an Internet based resource program called the Renzulli Learning system (described below) that facilitates implementation of enrichment clusters and other SEM components can be found in articles published in the research literature (Reis & Renzulli, 1997; Field, 2009).

Enrichment clusters are one component of the Schoolwide Enrichment Model (SEM) that is designed to create a time and a place within the school schedule when the *application* of knowledge and investigative learning strategies are the major focus of students' work (Renzulli, Gentry, & Reis, 2003). This "brand" of learning should be viewed as the exact opposite from the text consumption and proficiency testing approach to instruction that characterize most curricular activities in general education.

What Does An Enrichment Cluster Look Like?

Each week all of the students at the Brete Harte Middle School in San Jose California leave their regular classrooms to participate in interest-based enrichment clusters designed around a constructivist learning theory that focuses on investigative high-end learning. Under the guidance of their teacher and using various Internet-based resources, one group of students is identifying, archiving and preserving documents from the 1800s that were found in an old suitcase belonging to the first pharmacist in Deadwood, South Dakota. Another group with strong interests in media, technology, and the graphic arts is converting the archives into a digital format and developing a web site where this and other student research can be accessed. Others have prepared articles for publication in a Deadwood magazine.

These cross-grade clusters are scheduled on a rotating basis and usually last for eight weeks in the Fall of the year with a new series of enrichment clusters scheduled during the Spring months. Some clusters such as the one mentioned above go on for extended periods of time. Teachers develop the clusters around their *own* strengths and interests, sometimes working in teams that may involve parents and community members. Students make selections based on attractive descriptions that convey the action-oriented learning model that guides the clusters.

What Exactly is Investigative Learning?

All learning exists on a continuum ranging from deductive (didactic) and prescriptive learning on one end to inductive, self-selected, and investigative learning on the other. The essence of inductive or high-end learning is the *application* of relevant knowledge, thinking skills, and interpersonal skills to the solution of real problems. It involves finding and focusing a problem, identifying relevant information, categorizing and critically analyzing that information, and synthesizing and effectively communicating the results of an investigation or creative endeavor.

Real-life problems share four criteria. First, a real problem requires a personal frame of reference for the individual or group pursuing the problem. In other words, the problem must involve an emotional or internal commitment in addition to a cognitive interest. A second characteristic of real problems is that they do not have existing or unique solutions for persons addressing the problem. If an agreed-upon solution or prescribed strategies for solving the problem exist, then it is more appropriately classified as a "training exercise." Even simulations based on approximations of real-world events are considered training exercises if their main purpose is to teach predetermined content or thinking skills. The third characteristic of a real problem is best described in terms of why people pursue these problems. The main reason is that they want to create new products or provide information that will change actions, attitudes, or beliefs on the part of a targeted audience. For example, a group of young people who gathered, analyzed and reported on data about television-watching habits in their community were contributing information that was new, at least in a relative way, and that would cause people to think critically about the television-viewing habits of young people. The final characteristic of real problems is that they are directed toward a real audience. Real audiences consist of persons who voluntarily attend to information, events, services, or objects. A good way to understand

the difference between a real and a contrived audience is to reflect on what some students did with the results of their local oral history project – a biographical study of all the men from Connecticut who died in Viet Nam. Although they presented their findings to classmates, they did so mainly to rehearse presentation skills. Their authentic audiences consisted of members of a local historical society, veterans groups, members of servicemen's families, persons who attended a local commemoration of Viet Nam veterans, and persons who chose to read about their research in the features section of a local newspaper.

Enrichment clusters are purposefully designed to create a learning environment that enhances these kinds of experiences. Enrichment clusters are *not* mini-courses! There are no predetermined content or process objectives, and the teacher's role is decidedly different from the traditional knowledge transmission goals of regular curriculum or mini-course experiences. The nature of the problem guides students toward the use of just-in-time knowledge, use of appropriate investigative methods or creative production skills, and professional methods for communicating the results of their work. In this type of learning students assume roles as first-hand investigators, writers, artists, or other types of practicing professionals. Although students pursue these kinds of involvement at a more junior level than adult professionals, the overriding purpose is to create situations in which young people are thinking, feeling, and doing what practicing professionals do in the delivery of products and services.

Enrichment clusters should be viewed as vehicles through which students can increase their knowledge base and expand their creative and critical thinking skills, cooperative group work skills, and task commitment by applying their time and energy to self-selected problems or areas of study. Investigative learning should be viewed as the vehicle through which everything, from basic skills to advanced content and processes, "comes together" in the form of student-developed products and services. In much the same way that all the separate but interrelated parts of an automobile come together at an assembly plant, so also, do we consider this form of learning to be *the assembly plant of mind*. This kind of learning represents a synthesis and an application of content, process, and personal involvement. The student's role is transformed from one of lesson-learner to first-hand inquirer, and the role of the teacher changes from an instructor and disseminator of knowledge to a combination of coach, resource procurer, mentor, and guide-on-the-side. Although products play an important role as vehicles in creating

investigative learning situations, a major goal is the development and application of a wide range of cognitive, affective, and motivational processes.

How to Develop Your Own Enrichment Cluster

Developing an investigative enrichment cluster draws upon skills that most teachers already have, especially if they have ever been involved in extracurricular activities, club programs, or any kind of sports and arts programs. As you begin the process of developing your own cluster, you should keep in mind four issues:

1. Reversing the teaching equation. Your role in planning and facilitating an enrichment cluster is very different from traditional teaching. The more direct teaching you do in the cluster, the less likely you will be to turn the responsibility for creative and investigative activity over to the students. Although various planned start-up activities may be part of a cluster, too much preplanning on your part will push the cluster toward deductive rather than inductive teaching and learning. A key feature of enrichment clusters is the use of just-in-time (J-I-T) knowledge rather than storehouse or declarative knowledge typically associated with prescribed learning. J-I-T knowledge has immediate relevancy because it is needed to address a particular problem, and students typically escalate to much higher levels of knowledge than levels found in their grade level textbooks. In a later section we describe an Internet based program that allows teachers and students to easily access J-I-T knowledge that is the focus of enrichment clusters and other teaching/learning situations.
2. Reversing the role of students. If you are to alter your role from instructor to coach, mentor, referral agent, general contractor, or guide-on-the-side, you must help students see themselves as young professionals. Young people working on an original piece of historical research, creative writing, journalism, or play production become young historians, authors, journalists, and playwrights, scenery designers, or stage managers. This change in how you view students is important because it brings with it a different set of expectations for what students do and how you help them. Instead of teaching lessons, you will begin to think about how to help a young poet get his or her work published, how to get the shopping mall manager to allow space for a display of models of your town's buildings of historical significance, and how to engineer a presentation by young environmentalists to the state wildlife commission.

3. Each enrichment cluster is unique. As long as the guidelines for inductive teaching are followed, there is not a right or wrong way to plan and facilitate an enrichment cluster. Differences in interests, personalities, and styles between cluster facilitators are assets that contribute to the uniqueness of this type of learning. Even if you teach the same cluster on two or three different occasions, each rendition of the cluster should emerge as a unique entity. Inductive teaching is a more natural and, in many ways, easier process than structured teaching, but it also involves breaking some old habits based on traditional teacher roles. You will find that a little experience in an inductive learning environment will help you hone the skills that will become a very natural part of your teaching repertoire both in clusters and in your classroom.
4. When in doubt, look outward! Because you are striving for a different brand of teaching and learning in enrichment clusters and because clusters are modeled after real-world situations, it is a good idea to examine non-classroom conditions for models of planning, teaching, and patterns of organization. An athletic coach, the advisor for the drama club or school newspaper, or a 4-H Club leader, are excellent role models for enrichment cluster facilitators. Similarly, tasks and organizational patterns should resemble the activities that take place in a small business, a social service agency, a theater production company, or any laboratory that must generate real products and services. Your enrichment cluster will be most successful if the learning environment is as different as possible from what happens in a traditional classroom.

Guidelines for Developing an Enrichment Cluster

1. Select a Topic

Your first enrichment cluster should be based on a topic in which you have a strong interest. Make a list of topics about which you have always had a special fascination. Reflect on your choices, discuss your list with colleagues (there may be possibilities for collaboration), and prioritize the topics so that you can decide what the focus of your first enrichment cluster will be. Keep and add to the list and refer to it when choosing subsequent cluster topics. Experience has also shown that once you become involved in this type of teaching, you will begin to examine various experiences with an eye toward how they might make possible cluster topics.

2. Examine Key Questions

Enrichment clusters are always developed around the following six key questions:

1. What do people with an interest in this topic or area of study do?
2. What products do they create and/or what services do they provide?
3. What methods do they use to carry out their work?
4. What resources and materials are needed to produce high-quality products and services?
5. How and with whom do they communicate the results of their work?
6. What steps need to be taken to have an impact on intended audiences?

. The questions do not need to be answered immediately, sequentially, or comprehensively at this stage of planning, but they should always be kept in mind as you follow the overall guidelines for cluster planning. Your examination of the key questions provides an orientation to the topic rather than definitive answers that you will then present to your students. As your cluster develops, early discussions with students should be geared toward leading them through the same set of questions and allowing them to reach their own conclusions about the activities, resources, and products that professionals pursue in particular areas of study. The introductory activities that you will develop for students should be designed to lead them through these questions and to discover for themselves the essential concerns that guide the work of practicing professionals in respective fields. If you have all the answers before the cluster begins, the excitement of pure inquiry on the parts of the students will be lost.

3. Explore Key Questions

In many cases the answers to the key questions are common knowledge or common sense, but for purposes of clarification, we will discuss some of the ways that you can address the questions yourself and how you can guide your students through the questions as the cluster gets under way. The first and most obvious way to find out about the work of a professional is to find someone in a particular profession with whom you can talk. A brief interview based on the key questions with a cartoonist, a landscape architect, a fashion designer, or someone who works for the state environmental protection agency will give you the lay of the land and some recommended resources. When talking with professionals, keep in mind that you want to learn

what they routinely do in their jobs, how they do it, and what they produce. Conveniently, almost all professions are organized into societies and associations. A quick Internet search will lead you to mountains of resources about these organizations. In a school that offers enrichment clusters teachers typed in “professional associations” on the Yahoo web site and found that there are approximately 3500 professional organizations that cover almost every imaginable field of study. A teacher went to the Association of Professional Genealogists web site (www.apgen.org) and found a treasure trove of resources on the many different roles that people fill in the field (researchers, archivists, historians, etc.), state and national conferences, newsletters, publications where findings are reported, books on genealogical research methods, places where family records can be found, a listing of local chapters, and a directory of members by state. Individuals found on association membership lists can be valuable resources as speakers, mentors, or sources of local records. They might even be considered as a facilitator or co-facilitator of an enrichment cluster or a mentor to an individual or small group of students. By clicking on Connecticut, this teacher found the names, addresses, and phone numbers of thirteen professional genealogists in our state, one of whom lives less than five miles away.

Another way to explore the key questions is to obtain methodological resource books—what we call how-to books or “Mentors-in-Print.” Below are just a few how-to titles listed on the Association of Professional Genealogists web site:

- Greenwood, Val D. (2000). *The Researcher’s Guide to American Genealogy*. 3rd ed. Baltimore: Genealogical Publishing.
- Meyerink, Kory L., Ed. (1998). *Printed Sources: A Guide to Published Genealogical Records*. Salt Lake City: Ancestry.
- Mills, Elizabeth Shown. (2001, 1997). *Evidence! Citation and Analysis for the Family Historian*. Baltimore: Genealogical Publishing.
- Mills, Elizabeth Shown, Ed. (2001). *Professional Genealogy: A Manual for Researchers, Writers, Editors, Lecturers, and Librarians*. Baltimore: Genealogical Publishing.

A visit to the Genealogical Publishing Co. web site yielded an even more extensive list of potential resources (423 titles). Librarians and college bookstores can also help locate methodological resource books.

How-to books not only orient you (and students) in a field and provide information about how students can do investigative research, they will also give you ideas for specific studies,

special equipment or materials you might need, sources of data, newsletters or other places where research results might be published or conferences that might offer opportunities for student presentations. Sharing examples with students of both typical and unusual products that might result from the topic upon which your cluster will focus is also a good way to deal with Key Questions 1, 2, and 5.

Key Question 6 focuses on an important part of the facilitator's work. In the real world, almost all work is intended to have an impact on one or more targeted audiences, and in order to find those audiences, you will be serving as a referral agent, promoter, or marketing manager of student work. Within school, student and parent audiences are obvious options and good places to practice and perfect performances and presentations, but young people will begin to view themselves in a much more professional role when you help them seek audiences outside the school. Local newspapers, shopping guides, and city or state magazines are excellent places to submit written work. Public buildings and business offices are often receptive to requests to display the young people's work. Local or state organizations such as historical societies, writer's clubs, civic groups, environmental preservation organizations, and advocacy groups also provide opportunities for young investigators, inventors, and entrepreneurs to present their work. You can help young dramatists and film/video makers take their work "on the road" by contacting senior citizen centers, day care centers, church groups, or professional organizations. One group of students who wrote and produced a legal thriller presented a synopsis of their plot at a county bar association meeting.

Your role in helping young people find outlets and audiences in their community should be both advisory and preparatory. You might, for example, suggest that students contact local banks for possible displays, and you also might provide students with the names of bank managers. But after rehearsing their pitch with you and others in their group, the students themselves should make the contacts (in writing and/or by telephone), set up the interviews, and be prepared to answer questions that the bank managers might raise. After hearing one student pitch, a shopping mall manager exclaimed, "It's hard to turn down such an enthusiastic group of kids!"

Other opportunities for outlets and audiences outside school abound. Many professional organizations have newsletters, both state and national, and there are a number of magazines and journals that publish the work of young people. Founded in 1987, *Concord Review*

(www.tcr.org) publishes exemplary history essays by secondary students in the English-speaking world. Likewise, *Stone Soup* (www.stonesoup.com), the leading print magazine for young authors, publishes about 50 stories and 10 poems a year by young writers, and visiting their web site, you find information about other publications that take student writing as well as several no-cost Internet opportunities where young people can share their work with others around the world. In addition, *Kid News* (www.kidnews.com) is a free news and writing service for young people around the globe.

Almost every topic and area of study has directories that list sources where publishing opportunities exist for young people. *The Directory of Poetry Publishers* (Fulton, 2002) includes 21 categories of information on more than 2000 book and magazine publishers of poetry. *The Writer* (www.writermag.com) is another source of information for writing and publishing opportunities and includes specialty areas such as children's literature, technical writing, and writing for teenage audiences.

All fields of organized knowledge have similar resources. Enter almost any subject area into a search engine (e.g., www.yahoo.com; www.google.com; www.teoma.com) and follow the links. Entering "Archeology," for example, led us to numerous resources ranging from newsletters to specialty areas (e.g., Underwater Archeology), from places where students can take virtual field trips to active sites where real-time excavations are being conducted. In no time at all you will find all types of information and resources that deal with the key questions. In the process you will also multiply the options that your students might pursue as your enrichment cluster gets under way.

Contests and competitions are also great outlets and audiences. Most teachers are familiar with science fairs, National History Day, and Math League, but there are thousands of competitions in areas such as photography, fashion design, inventions, greeting cards, play writing, technology, and web page design. Preparing for and entering competitions creates a tremendous amount of excitement and enthusiasm in young people, although you should be cautious about using competitions to put pressure on students. Making them aware of competitive opportunities is part of a good coach's job, but the decision to enter a competition should be made by the students themselves.

Remember, your job is *not* to know all of the possible outlets for students' products or the vehicles for reaching different audiences. Simply knowing that such resources exist, having a sample or two to illustrate what typical resources looks like, and being able to provide guidance

about where and how to search for them on the Internet or in other places maintains the goal of encouraging young practicing professionals. The very search for outlets and audiences; writing query letters and submitting work for possible publication, presentation, or display; and receiving replies (even negative ones) are all part of the creative process and a major source of motivation for aspiring writers, scientists, artists and other action oriented young people.

4. Write Your Enrichment Cluster Description

Writing the enrichment cluster description presents special challenges. The description must convey (in approximately 100 words or less) the essence of what this type of experience is all about in a way that captivates students without being too specific. This task can be especially difficult because of habits formed from too much didactic teaching and established student perceptions concerning what learning in school is all about. The challenge is further complicated because you can't (and shouldn't) specify in the description exactly what students will be doing in the cluster, though you do want to provide some ideas as to the various roles students might take on in the cluster.

Several suggestions for writing cluster descriptions have emerged from our research. First, at all costs, you must avoid using "learn" in the cluster description. Students have come to associate learning in school with the school's traditional information transmission function. Enrichment clusters are different, and you should explore verbs that convey action (doing tasks) rather than transferring and assimilating information. Think about the specific tasks associated with a particular topic or area of study (e.g., in a cluster involving building and marketing compost bins, you might use verbs such as design, field test, construct, advertise, market, contact, display, and sell).

Another way to write cluster descriptions is to pose questions about potential student interests and possible types of involvement:

- "Do you like to express your feelings by writing poetry or short stories?"
- "Are you concerned about finding better ways to protect wildlife?"
- "Would you like to try your hand at designing fashions for teens?"

Each of these questions relates to a topic around which a cluster might be developed, and yet they are open-ended enough to enable a broad range of activities in specific interest areas.

5. Launch Your Enrichment Cluster

On a practical note, since students will be coming from different classrooms and grade levels, the first thing you will want to do is learn their names, help them to learn one another's names, and make them feel at ease. You can distribute nametags (the ones on neck strings are best) and ask students to wear them at each cluster meeting. It is a good idea to collect the nametags at the end of each session so that they will be available for subsequent sessions. (You can use the nametags for an introductory activity in which students develop a logo for the cluster that they will place on their nametags. Have the students divide into groups to brainstorm ideas. Vote on the ideas and ask for one or more volunteers to draw a logo based on the most popular idea. You can then make copies of the logo and let students paste it on their nametags.)

Since students who have signed up for your cluster have expressed an interest in the topic, beginning a cluster is usually easier than introducing a new topic in the regular classroom. However, it may take some time for students to understand the different approach to learning that is the basis for enrichment clusters. A display of some of the products or tools typically used by professionals in your topic area is always a good way to begin. In a cluster on archeology entitled *The Trash Heaps of Mankind*, the facilitator showed slides of some famous and local archeological discoveries (obtained from the state archeologist). She then organized a short guessing game about what was in a "Mystery Box" in the front of the room. The teacher opened the box to reveal a trowel, a sieve, a pair of gloves, a dust brush, pegs and string, a marking pen, and a camera. She pointed out that these were the main tools of the archeologist and that an examination of material found in garbage dumps was one of the ways that archeologists analyzed both past and present cultures. A short videotape of a dig in their own state further built up interest in the work of practicing archeologists. At a subsequent session, an archeology professor from a nearby university made a presentation that provided several ideas for local research opportunities and also cautioned students about the ethical responsibilities of maintaining site integrity.

6. Escalate Content and Process

The next step involves the various jobs in the cluster and the division of labor—all of which should be determined by students. In addition, this step involves escalating the level of challenge and the quality of the students' work, an extremely important part of your work in the cluster. One of the problems we encountered in our research on enrichment clusters was a failure for some facilitators to escalate the level of content and methodological processes pursued

within a cluster. We observed many exciting, fun-filled activities, and this kind of enjoyment of learning is unquestionably one of the most desirable features of a good cluster. However critics may say that clusters are nothing more than fun and games or that students carried out their work based on existing skills rather than acquiring more advanced skills. You can guard against these criticisms by examining each cluster with an eye toward what constitutes investigative and rigorous content within the field or fields of study around which the cluster is organized.

The following case study of an enrichment cluster points out how a topic such as quilting can be approached with both artistic objectives, and at the same time, can include rigorous goals through a process we call “academicizing”.

Academicizing simply means infusing into a cluster scholarly material and the know-how of professionals that can be found in reference and web-based resources that approximate the ways in which experts in a particular field go about studying a topic. Any topic, from basket weaving to making brownies can be made more academically rigorous. Basket weaving can involve geometry, the experimental testing of materials, and the comparative study of cultures and creative arts between various groups; and brownie making can be a launching pad for experimenting with original recipes, developing and illustrating a hometown cookbook, and starting a small business with manufacturing, advertising, sales, accounting and marketing “divisions.”

Let’s analyze academicizing by reviewing a case study of an enrichment cluster based on quilting. The teacher used a webbing technique and group discussion to examine all the ways that professional quilters examine this area of study. The first step in organizing a cluster is making it known to the student body. For this purpose, an advertisement is created that gives some indication of the topic and scope of the cluster. An advertisement for the quilting cluster in this case study is as follows:

The Quilting Bee

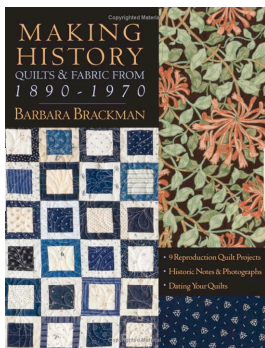
Pictures in fabric, family stories, expressions of beauty, geometric shapes, historical documentation. All these things are quilts! And quilters are experts in studying the history of famous people, families, and important places and events.

Do you want to know the history of quilts, design your own original quilt, find out how they are made, how they have been used? Come to Mrs. De Wet’s quilting bee and try your hand at FABRIC ART!



A Tee-Shirt Quilt

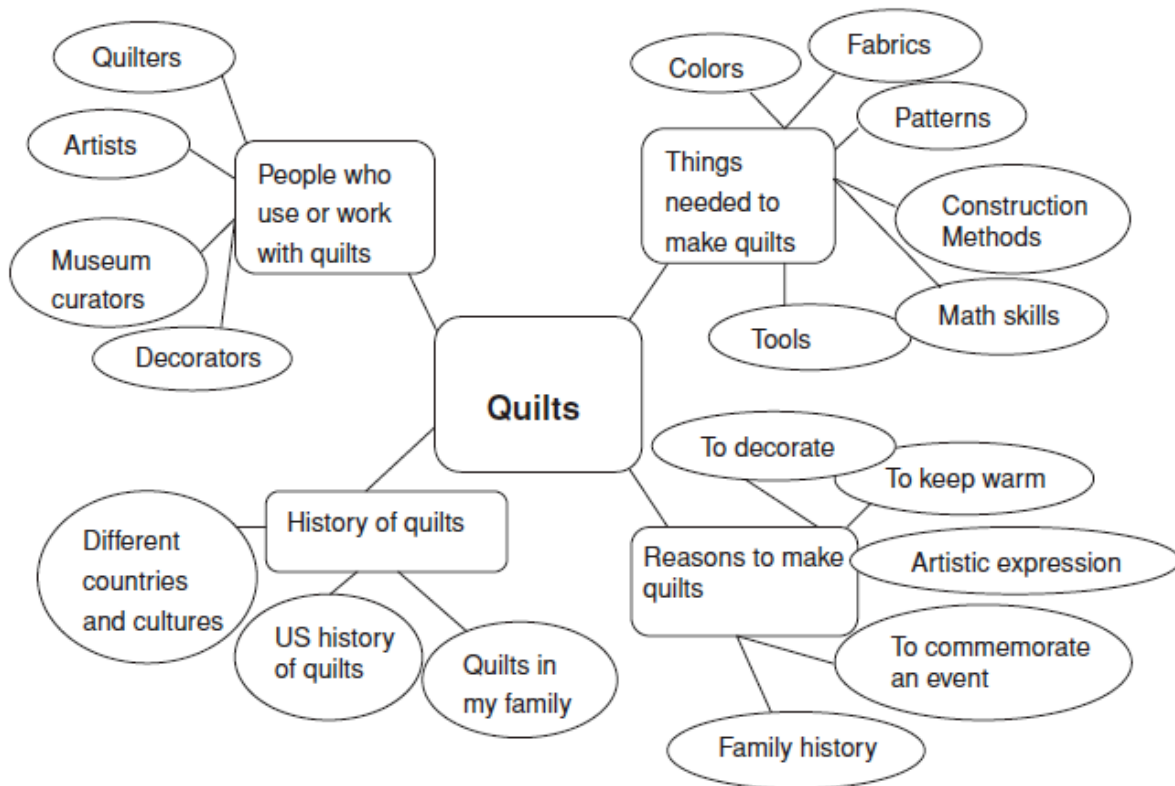
An important thing to remember is that the teacher does not need to be an expert in quilting, although an interest in the topic and a willingness to find a few helpful resources is an excellent starting point. The teacher functions mainly as a facilitator or “Guide-On-The Side” by getting the necessary know-how from a few carefully selected books that can be used by both teacher and students. A quick search using the How-To Books database in the Renzulli Learning System (Renzulli & Reis, 20xx) for this cluster turned up the following three How-To books:



These books provided the background for introductory material to get the cluster started, they provide information leading to student discussions and plans for their own work, and they help to help fill in some of the academic aspects of quilting displayed in the concept web below. The facilitator might choose to emphasize any feature of the topic at the introductory meeting of the cluster. For our example, this facilitator brought in some quilts from home and others that she borrowed from friends in the community. The first quilt she showed was one her grandmother made from scraps left over from family clothing. Each piece of fabric has a history and connects closely to a family member or event. A patch showing medals won by a family war hero, another about a historical building in their town, and one showing the family coat of

arms were discussed from a historical perspective. The teacher developed a great deal of interest and motivation by arranging to have a members of a local quilting club make a presentation and go over some of the basic skills necessary to get started.

Another type of quilt displayed was a memory quilt made by students in a previous cluster as a birthday gift for this teacher. The teacher told the story of each patch and invited students to touch and examine the quilts. She elicited a discussion on colors, patterns, and fabrics found in the quilts, as well as the construction of each quilt. She then drew students' attention to the above books and went over the many aspects of quilt making. She gave students ample time to page through the books, comment on what interested them, and begin to jot down ideas about possible products, outlets, and audiences for their work. She spent time with the students brainstorming possible topics for historical investigations and together the students and teacher developed the following concept web that became a bulletin board display:



Once this web was created, the facilitator surveyed students to see which aspect of quilting interests them. Some students were more interested in the historical aspects of quilting rather than the needlework, but participated enthusiastically by researching the historical background for particular segments of the quilts that were under construction. The teacher discovered that one student was particularly interested in her own family history and decided to express this history through an original quilt. Several other students were interested in the scientific preservation of quilts and old fabric. This led the teacher to contact a museum employee who led them to find another person knowledgeable in the preservation of fabrics. One thing about enrichment clusters is that the teacher-as-facilitator follows interest-based leads. This guide-on-the-side role is very different to the traditional teacher role as a disseminator of information!

The teacher asked students to gather in small interest groups and come up with a list of ideas and resources for quilts, and to discuss the the research they would need to do in order to make their quilts “tell a story.” The teacher also built into the cluster planning and organizational skills by asking each group or individual to complete a Type III Enrichment Management Plan. This plan helped students to focus goals, deadlines and target dates, and explore products, outlets, and audiences for their quilting activities. One group wanted to make baby quilts to donate to a local homeless shelter and another decided to do a history of their town. The teacher arranged to have a group of ladies from a neighborhood quilting bee make a presentation to and teach students some basic skills necessary to get started on their own work.

The teacher also helped to guide students in planning their activities, helped them find the necessary resources, and gain the skills needed to complete their projects. The student interested in her family history needed to learn oral history data-gathering skills to record interviews with family members. Another how-to book on this skill was ordered by the school librarian and resulted in a whole new set of academic research skills illustrating that quilting, far from being a fun-and-games subject, is a topic that embraces many historical, artistic, and sociological research skills. The students interested in family history decided to publish a small book complete with family trees and family photographs. Members from the visiting quilting bee agreed to serve as mentors and helped these young quilter historians in the construction of their projects. An exhibition of the students’ quilts was arranged at a local fabric store and some of the quilts were displayed in public buildings before being donated to a local homeless shelter.

Why Is Academicizing Enrichment Clusters Important?

In this day and age of relentless pressure to grind up achievement test scores at all costs, we have witnessed a growing lack of genuine student engagement in learning and an epidemic of boredom on the parts of more and more students. While our research has shown that the kinds of learning experiences that define enrichment clusters make learning engaging and enjoying; and that these experiences do, if fact, result in improved achievement, many education leaders have opted for highly prescriptive drill-and-practice approaches to test score improvement. More than a few administrators have said to me that they would like to initiate a cluster program, but test-prep in its most repetitive form must take precedence.

For this reason it is contingent upon us to make certain that we can show specific examples of academic content and thinking skills in our enrichment clusters. The work that the students in the quilting cluster did on historical research, interviewing skills, geometric design, fabric preservation, and the oral and visual presentation skills used in sharing their work need to be *highlighted* in any reports, press releases, and presentations made about the cluster and parents should be provided with a checklist of all the important academic skills that were implicit in the work of the cluster. Fun and engagement are, unquestionably, an important goal of enrichment clusters, but we can't leave ourselves open to criticism because of the external pressures being placed on schools as a result of test score mania!

Another thing we have learned from teachers that have worked hard to academicize their clusters is that they have shown pride in the new content area knowledge they themselves have gained about topics of interest, the research skills they have acquired as a result of becoming familiar with how-to books, and finding and working with community resources. Many teachers have told me that they are applying some of the strategies used in enrichment clusters to their regular classroom teaching, and by so doing, they have observed increases in student engagement and motivation.

Ensuring Authenticity in Enrichment Clusters: Gathering Original Data

Original contributions to almost every field of knowledge are based on data gathered through the use of one or more instruments. Over many years of working with students in high-end learning situations, we have discovered that there is a certain magic associated with gathering original data. Young people are surrounded with an almost infinite number of data-gathering opportunities, and these opportunities provide them with the possibility of creating new

knowledge. This knowledge may not be new for all mankind, but it may be original in a local and relative way. So, for example, when a group of elementary students spent an entire school year gathering and analyzing samples of rainwater for sulfur and nitrogen oxide emissions, the main pollutants responsible for acid rain, they were able to prepare a scientifically respectable report about the extent of acid rain that was falling in their region of the country. Their teacher helped them obtain a standard rain gauge and a kit for testing acidity, items that can be found in almost any science equipment catalogue. Additional resources enabled these students to prepare statistical and graphic summaries of their data, compare their findings with data from national and regional reports (easily accessible over the Internet), and design maps showing acid rain trends over time and across geographic regions. The data provided the excitement and motivation to study environmental and health problems associated with various types of pollution, and they found receptive audiences for their work among state environmental protection groups, the U. S. Environmental Protection Agency, and the National Weather Bureau. The students also exchanged their report and findings with a group doing a similar study at a school in England, which they located by entering “Acid Rain” into a search engine on the Internet. A little data goes a long way in helping students feel like real researchers and do the advanced kinds of work that escalates the level of content and methodology needed to produce high quality products.

Using Technology To Enhance Investigative Skills In enrichment Clusters

The advent of technology in education has created a renewed interest in personalizing learning and providing teachers with the tools necessary for differentiating curriculum. Early efforts to use technology to personalize learning generally began with a focus on basic curriculum competencies and more efficient procedures for text consumption. Now, rather than covering material in a lockstep fashion for all students at the same time, teachers can direct content at different levels to students according to their varied achievement levels.

A new program created with support from the University of Connecticut Research and Development Corporation has taken steps to extend the concept of personalization by measuring a broader range of student characteristics and focusing on engagement and enjoyment in learning, which has resulted in improved achievement (Renzulli & Reis, 2007; Field, 2009). The program, called the Renzulli Learning System (RLS), is based over thirty-five years of research on cognitive development and whole child research can best viewed as a tool that can be applied

to all curricular areas and grade levels. One teacher, interviewed in a research study (Field, 2009) dealing with this tool for high engagement in learning said, “It easily improved my student’s enthusiasm, enjoyment, and engagement as well as the scores on their achievement tests. It was like having a dozen teaching assistants in my classroom every day, all day!” RLS includes four steps, and an overview of the system is presented in Figure 1 (Attached).

Step 1: Strength Assessment Using the Electronic Learning Profile

The first step consists of a computer-based diagnostic assessment that creates a profile of each student’s academic strengths, interests, learning styles, and preferred modes of expression. The on-line assessment generates a personalized profile that highlights individual student strengths and sets the stage for step two of the RLS. The profile acts like a compass for the second step, in which a differentiation search engine examines thousands of resources and selects a personalized group of from 2000 to 3000 resources for each student based on his or her profile. Teachers can use information from the student profiles to create groups of students at various achievement levels or who share common interests or learning styles. They can also design instruction based on identified interests or learning preferences, send assigned curricular activities or projects to be completed independently or in small groups, and create pre/post assessments for evaluating student work. Parents may also access their child’s profile and web activities, promoting at-home interest in learning and parent involvement.

Step 2: Enrichment Differentiation Database

In step two, the differentiation search engine matches student strengths and interests to a database of approximately 40,000 multiply tagged high-engagement activities, materials, resources, and opportunities for further study that are grouped into the following fourteen categories:

1. Virtual Field Trips
2. Real Field Trips
3. Creativity Training
4. Critical Thinking
5. Projects and Independent Study
6. Contests and Competitions
7. Websites
8. Fiction Books
9. Non-Fiction Books

10. How-To Books
11. Summer Programs
12. On-Line Classes and Activities
13. Research Skills
14. Videos and DVD's

These resources are not merely intended to inform students about new information or to enable them simply to surf the web. Rather, they are used as vehicles to help students find and focus a standards-based topic or explorations of personal interest that they might like to pursue in greater depth. Many of the resources provide the methods of inquiry, advanced level thinking and creative problem solving skills, and investigative approaches that are consistent with the current emphasis on 21st Century Learning Skills. Students are guided toward the *application of knowledge* through the development of class-related assignments, original research studies, creative projects, and action-oriented work that applies knowledge to personally meaningful areas of interest. All resources in the database are classified and cross-referenced by subject area, state or national standards, critical and creative thinking skills, and grade level. The database includes resources exclusively reserved for teachers' use, assessments for each of the fourteen enrichment resource categories and lesson plans organized by subject area. Teachers can selectively send differentiated assignments to individual students or targeted groups by simply clicking names or pre-established groups on the class roster.

The resources available in step two also provide students with places where they can pursue advanced work in their strength areas and areas of personal interest. Evaluation vehicles are built into the system and teachers can provide feedback face-to-face or electronically based on student performance..

Step 3: The Wizard Project Maker

The third feature of Renzulli Learning is a project organization and management plan for students and teachers called The Wizard Project Maker. This e-guide enables teachers to help students use their web-based explorations for class-related work and original research.

Specifically, the Project Maker provides students with the meta-cognitive skills to: define a project and set a goal; identify and evaluate both the resources to which they have access and the resources they needs (e.g. time, Internet sites, teacher or mentor assistance); prioritize and refine goals; balance the resources needed to meet multiple goals; learn from past actions, projecting future outcomes; and monitor progress, making necessary adjustments as a project unfolds.

The Wizard Project Maker establishes a creative and viable responsibility for teachers in their role as “the guide on the side.” By helping students pursue advanced levels of challenge and engagement through the use of the Wizard Project Maker, students see teachers as mentors rather than task-masters or disseminators of knowledge.

Step 4: The Total Talent Portfolio

The final Component in the Renzulli Learning System is an automatic compilation and storage of all student activity from steps one, two, and three into a cumulative student record called the Total Talent Portfolio. Work saved in students’ electronic portfolios includes their favorite sites, work from their teacher, student self-assessments of teacher assigned work, their evaluations of sites visited, notes from their online research and any projects they have started or finished. Teachers and parents can review students’ portfolios at any time giving teachers opportunities for feedback and guidance to individual students and providing parents with information about students’ progress. The portfolio and a related component called The Personal Success Plan can also be used for:

- Providing points of reference for future teachers
- Making decisions about possible class project extra credit options
- Selecting subsequent enrichment preferences
- Designing future projects and creative activities
- Exploring on-line courses and competitions
- Participating in extra-curricular activities
- Deciding on electives in Middle and High School
- Guiding college selection and career exploration alternatives

The Total Talent Portfolio “travels” with students throughout their educational career, as storage of previous activities and creative accomplishments that they might want to include in college applications. This ongoing record that helps students, teachers, guidance counselors, and parents make decisions about future educational and vocational plans.

The Renzulli Learning System is designed to help busy teachers personalize student learning by enabling them to address individual differences, diverse student needs, and increased

pressures to improve student achievement. The proprietary search engine technology guarantees resource match-making and personalized learning. This approach extends far beyond Gutenberg-on-line by providing teachers with an easy-to-use research based tool that can be applied to all classroom situations. Simply stated, the goal of the RLS is to increase achievement by capitalizing on high engagement and enjoyment of learning, two research proven components of effective schooling. Interested readers can examine the RLS by going to www.renzullilearning.com and clicking on Test Drive Renzulli Learning.

Field, G. B. (2009). The Effects of the Use of Renzulli Learning on Student Achievement in Reading Comprehension, Reading Fluency, Social Studies, and Science. *International Journal of Emerging Technologies in Learning (iJET)*, Vol 4, No 1., pp. 23 – 28.