A Technology Based Program That Matches Enrichment Resources With Student Strengths

One hesitates using the word revolutionary in this day of technological advancements by the hour, but the word did occur to me as I reviewed the Renzulli Learning System. It provides a new level of differentiation and engagement.

John Lounsbury
National Middle School Association
Georgia College & State University

Joseph S. Renzulli and Sally M. Reis
The National Research Center on the Gifted and Talented
University of Connecticut, Neag School of Education, Storrs, CT, USA

Abstract

Remarkable advances in instructional communication technology (ICT) have now made is possible to provide high levels of enrichment and the kinds of curricular differentiation that facilitate advanced learning services to students who have access to a computer and the Internet. But in order to maximize the potential if ICT it is necessary to construct programs that are based on learning theory that goes beyond the didactic and prescriptive models that have resulted in too much worksheets-on-line and electronic encyclopedias. The Renzulli Learning System (RLS) uses a strength-based learning theory called the Enrichment Triad Model that is purposefully designed to promote advanced level learning, creative productivity, and high levels of student engagement by focusing on the *application* of knowledge rather than the mere acquisition and storage of information.

The Renzulli Learning System is a comprehensive program that begins by providing a computer-generated profile of each student's academic strengths, interests, learning styles, and preferred modes of expression. A search engine then *matches* Internet resources to the student's profile from fourteen carefully screened data bases that are categorized by subject area, grade level, state curricular standards, and degree of complexity. There are also hundreds of enrichment activities that can be down loaded and reproduced for individual or group learning activities. A management system called the Wizard Project Maker guides students in the *application* of knowledge to teacher or student selected assignments, independent research studies, or creative projects that individuals or small groups would like to pursue. Students and teachers can evaluate the quality of students' products using a rubric called The Student Product

Assessment Form. Students can rate each site visited, conduct a self-assessment of what they have gained from the site, and place resources in their own Total talent Portfolio for future use. RLS also includes a curriculum acceleration management system for high-achieving students that is based on the many years of research and widespread use of a popular differentiation process called Curriculum Compacting.

Index Terms

Strength Based Learning Theory
Individualized Resource Matching
Built In Assessment and Management Tools

Every teacher has had the satisfaction of seeing a child "turn on" to a topic or school experience that demonstrates the true joy and excitement of both learning and teaching. We have sometimes wondered how and why these high points in teaching occur, why they don't occur more frequently, and why more students are not engaged in highly positive learning experiences. Teachers are also painfully aware of the boredom and lack of interest that so many of our young people express about so much of the work they do in school. Highly prescriptive curriculum guides, endless lists of standards to be covered, and relentless pressure to increase achievement test scores have often prevented us from doing the kind of teaching that results in those joyous but rare times when we have seen truly remarkable engagement in learning.

One teacher we interviewed as part of a research project dealing with high engagement in learning said, "I could easily improve student enthusiasm, enjoyment, and engagement if I had about a dozen teaching assistants in my classroom!" It was comments like this plus the almost infinite resources that are now available through the Internet that inspired the development of the Renzulli Learning System (RLS) at the University of Connecticut's Neag School of Education. The program is sponsored by the University of Connecticut Research and Development Corporation, with income from subscriptions used to support further research. An overview of the RLS is presented in Figure 1.

The use of instructional technology, and especially the Internet, has evolved rapidly over the past decade. First "generation" use of technology consisted mainly of what might be called worksheets-on-line, with the added advantage of providing students with immediate feedback about correct responses and subroutines for remediating incorrect answers. This generation was not unlike the teaching machines of the 1950s. The next generation consisted mainly of courses-on-line, and although this innovation enabled students to have access to teachers and professors with expertise beyond what might be available locally, it usually followed the same pedagogy to traditional courses (i.e., read the chapter, answer questions, take a test). The third generation was a great leap forward because of the advent of hypertext. Students could now click on highlighted items in on-line text to pursue additional, more advanced information, and the kinds of scaffolding that consumes more time that most teachers can devote to individualized learning.

The Renzulli Learning System might best be viewed as the next generation of applying instructional technology to the learning process. This program is *not* a variation of earlier generations of popular e-learning programs or web-surfing devices being offered by numerous

software companies. It is a totally unique use of the Internet that combines computer based strength assessment with search engine technology, thus allowing true differentiation in the matching of thousands of carefully selected resources to individual strengths. The RLS also has what might best be called theoretical integrity. It is based on a high-end learning theory called the Enrichment Triad Model (Renzulli, 1977) and numerous research studies dealing with model implementation (Renzulli & Reis, 1994). The Triad Model focuses on the kinds of creative productivity that develops higher-level thinking and investigative skills, and it places a premium on the application of knowledge to learning situations that approximate the *modus operandi* of the practicing professional. With minimal skills in the use of the Internet, and only a small amount of the teacher's time, all schools can easily make use of a system that will give teachers the equivalent of "a dozen assistants" in their classrooms. The Renzulli Learning System is a four-step procedure that is based on more than thirty years of research and development dealing with the diagnosis and promotion of advanced level thinking skills, motivation, creativity, and engagement in learning.

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, which takes about thirty minutes, results in 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, which is a differentiation search engine that examines thousands of resources that relate specifically to each student's profile. Student profiles can also be used to form groups of students who share common interests. A project management tool guides students and teachers to use specifically selected resources for assigned curricular activities, independent or small group investigative projects, and a wide variety of challenging enrichment experiences. Another management tool enables teachers to form instructional groups and enrichment clusters based on interests and learning style preferences. Teachers have instant access to student profiles, all sites visited on the web, and the amount of time spent in each activity. Parents may also access their own child's profile and web activities. In order to promote parent involvement, we suggest that students actually work on some of their favorite activities with their parents.

Step 2: Enrichment Differentiation Databases

In step two the differentiation search engine matches student strengths and interests to an enrichment database of 10,000 enrichment activities, materials, resources, and opportunities for further study that are grouped into the following categories:
     Virtual Field Trips
     Real Field Trips
     Creativity Training
     Critical Thinking
     Projects and Independent Study
     Contests and Competitions
     Websites
     Fiction Books
     Non-Fiction Books
     How-To Books

Summer Programs
On-Line Classes and Activities
Research Skills
Videos and DVDs

These resources are not merely intended to inform students about new information or to occupy time surfing around the web. Rather, they are used as vehicles for helping students find and focus a problem or creative exploration 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 approximate the *modus operandi* of the practicing professional. Students are guided toward the *application of knowledge* to the development of original research studies, creative projects, and action-oriented undertakings that put knowledge to work in personally meaningful areas of interest. The resources also provide students with suggestions for outlets and audiences for their creative products. A set of learning maps for teachers is provided for each of the fourteen enrichment resource databases and for the many other resources available for teachers. Teachers can also download numerous curricular activities for use in their classrooms. Management tools classify and cross reference activities by subject area, thinking skill, and subject matter standards.

Our goal in this approach to learning is to promote high levels of engagement by providing a vehicle where students can engage in *thinking, feeling, and doing like the practicing professional,* even if they are operating at a more junior level than adult scientists, artists, writers, engineers, or other adults who pursue knowledge in professional ways.

Research on the role of student engagement is clear and unequivocal—high engagement results in higher achievement, improved self-concept and self-efficacy, and more favorable attitudes toward school and learning. There is a strong body of research that points out the crucial difference between time-spent and time-engaged in school achievement. In the recently published international PISA study, the single criterion that distinguished between nations with the highest and lowest levels of student achievement was the degree to which students were engaged in their studies. This finding took into account demographic factors such as ethnicity and the socioeconomic differences among the groups studied. In a longitudinal study comparing time-spent vs. time-engaged on the achievement of at-risk students, Greenwood (1991) found that conventional instructional practices were responsible for the students' increased risk of academic delay. And a study by Ainley (1993) reported that there were important differences in achievement outcomes favoring engaged over disengaged students of similar ability.

The resources available in step two also provide students with places where they can pursue advanced level training in their strength areas and areas of personal interest. On-line courses and summer programs that focus on specific academic strengths and creative talents are ways that any school or parent can direct highly able and motivated students to resources that may not be available in the regular school program.

Step 3: The Wizard Project Maker
A special feature of Renzulli Learning is a project organization and management plan for students and teachers called **The Wizard Project Maker**. This guide (attached) allows teachers

to help students use their web-based explorations for original research, investigative projects, and the development of a wide variety of creative undertakings. The sophisticated software used in this tool automatically locates potentially relevant web-based resources that can be used in connection with the student's investigative activity. This management device is designed to fulfill the requirements of a Type III Enrichment experience, which is the highest level of enrichment described below in the discussion of the Enrichment Triad Model. Specifically, the Project Maker provides students with the metacognitive skills to: Define a project and set a goal; Identify and evaluate both the resources to which they have access and the resources they need (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 helps students make the best use of web resources, it helps to focus their interests as they pursue advanced level work, and it is a built in safeguard against using Renzulli Learning merely to surf around the web. It also 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. The Wizard Project Maker also has a meta-cognitive effect on students, i.e., they have a better understanding about what investigative learning is all about. As one teacher recently said, "The Wizard Project Maker helps my students understand 'the why' of using the Internet." A Wizard Project Maker template is attached to this article and Wizard Software is built into the System to help students acquire resources for the various sections of this planning device.

Step 4: The Total Talent Portfolio
The final step in the Renzulli Learning System is an automatic compilation and storage of all student activity from steps one, two, and three into an on-going student record called the Total Talent Portfolio. A management tool allows students to evaluate each site visited and resource used, students can complete a self-assessment of what they derived from the resource, and if they choose they can store favorite activities and resources in their portfolio. This feature allows easy-return-access to on-going work.. The portfolio can be reviewed at any time by teachers and parents through the use of an access code, which allows teachers to give feedback and guidance to individual students and provides parents with information about students' work and opportunities for parental involvement. The portfolio 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. It can serve as a reminder of previous activities and creative accomplishments that they might want

to include in college applications and it is an ongoing record that can help students, teachers, guidance counselors, and parents make decisions about future educational and vocational plans.

The Theory and Research Underlying the Renzulli Learning System

The RLS is based on a learning theory called the Enrichment Triad Model, which was developed in 1977 and implemented in thousands of schools in the United States and several overseas nations (see Figure 2). A wide range of programs based on the Enrichment Triad Model were developed by classroom teachers and gifted education specialists in different school districts across the country that serve diverse populations of students at all grade levels. Many examples of creative student work were completed as part of the enrichment opportunities built around the Triad Model.
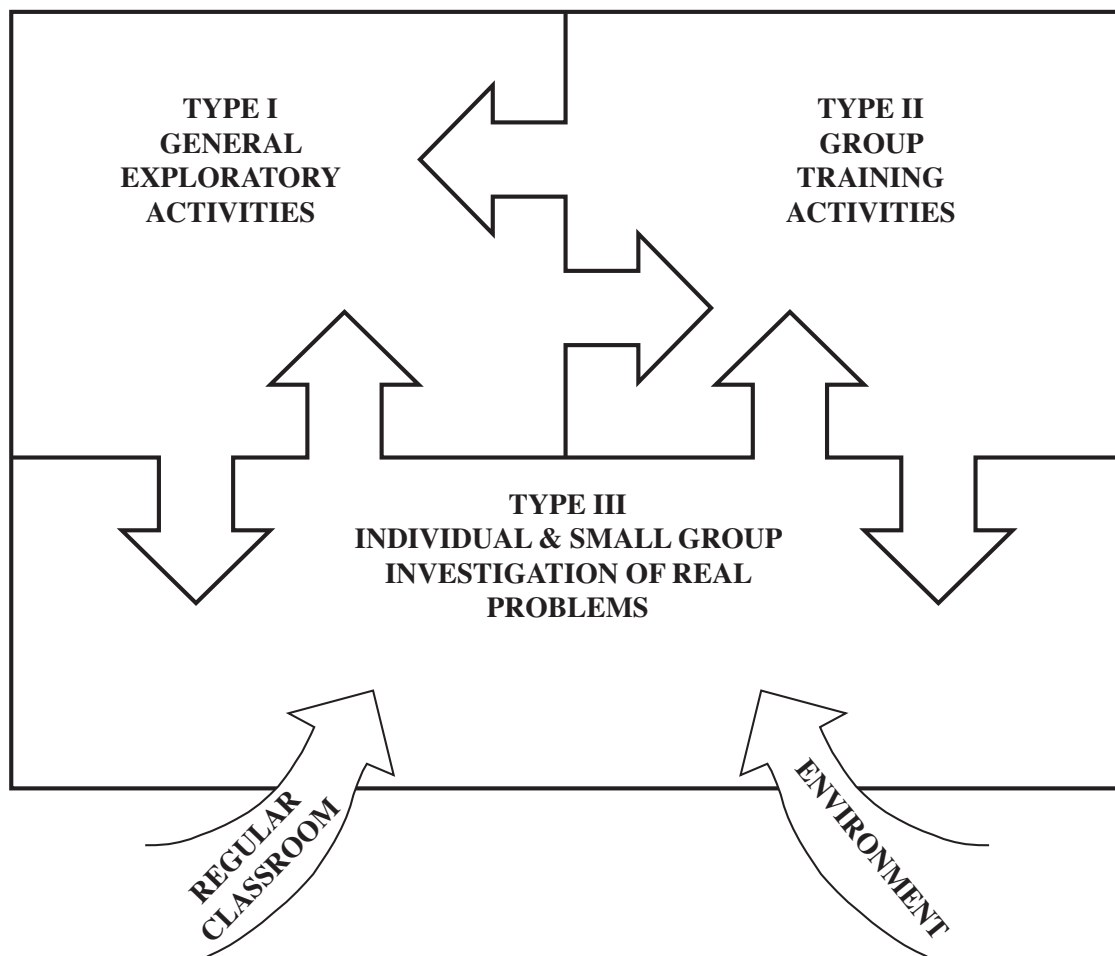

Figure 2: The Enrichment Triad Model

Teachers using the model worked very hard to access resources to provide enrichment for students, but the many responsibilities of classroom teachers and the amount of time required to track down resources made this a daunting task. In the Renzulli Learning System, thousands of resources and enrichment materials are provided for teachers and students with the click of a mouse. And what makes this system unique is that these resources are individually tailored to

students' abilities, interests, and learning styles. The resources can be accessed in school, during after-school programs, or even at home when students want to pursue enriched learning opportunities on their own.

The Enrichment Triad Model was designed to encourage advanced level learning and creative productivity by: (1) exposing students to various topics, areas of interest, and fields of study in which they have an interest or might develop an interest, (2) providing students with the skills and resources necessary to acquire advanced level content and thinking skills, and (3) creating opportunities for students to **apply** their skills to self-selected areas of interest and problems that they want to pursue.

Type I Enrichment is designed to expose students to a wide variety of disciplines, topics, occupations, hobbies, persons, places, and events that would not ordinarily be covered in the regular curriculum or that are extensions of regular curriculum topics. In the Renzulli Learning System, Type I Enrichment includes virtual field trips, on-line activities that challenge student thinking, exciting web sites, books, videos, and DVDs related to areas of special interest, and other exposure activities that are associated with independent projects and other components of the system. Type I experiences might be viewed as the motivational "hook" that causes individual students to become turned-on to particular topic or area of study that they will subsequently pursue in greater depth.

Type II enrichment consists of materials and activities designed to develop a broad range of higher level thinking processes and advanced inquiry skills. Some Type II training is general, including the development of: (1) creative thinking and problem solving, critical thinking, and affective processes; (2) a wide variety of specific learning how-to-learn skills; (3) skills in the appropriate use of advanced-level research methods and reference materials; and (4) written, oral, and visual communication skills. Teachers can use general Type II Enrichment activities (e.g., a lesson in creative thinking) that are available on-line for whole group or small group instruction, or an on-line activity can be recommended for individuals or small groups to pursue on their own.

Other forms of Type II Enrichment are specific to a particular project that a student might be pursuing. It cannot be planned in advance and usually involves advanced research skills in an interest area selected by the student. For example, a small group of students became interested in mechanical engineering after a Virtual Field Trip that dealt with some of the world's most imaginative bridges. They located resources on the Internet that provided instruction for designing, planning, and building a model of a bridge. They also found a number of model bridge competitions to which they subsequently submitted their designs.

In the Renzulli Learning System, Type II training is embedded across many of the Enrichment Activities listed above. A quick tour of the various categories will help you become familiar with the vast array of resources that can be used for all three types of enrichment in the Triad Model. If several students are using the Renzulli Learning System it will be fun and informative to take a "tour" through their Enrichment Activities with them.

Our experience in using the Enrichment Triad Model over the years has shown that Types I and II enrichment and/or interests gained in the regular curriculum or out-of-school activities will motivate many students to pursue self-selected topics in greater depth. We call these advanced types of involvement Type III Enrichment, which is defined as individual or small group investigations of real problems. When students choose to become involved in Type III Enrichment, they usually are interested enough in a topic to pursue a self-selected area of study in great depth. They also are willing to commit the time necessary for advanced content acquisition and process training in which they assume the role of a first-hand inquirer. The goals of Type III Enrichment are:

- to provide opportunities for applying interests, knowledge, creative ideas and task commitment to a self-selected problem or area of study,
- to acquire advanced level understanding of the knowledge (content) and methodology (process) that are used within particular disciplines, artistic areas of expression and interdisciplinary studies,
- to develop authentic products that are primarily directed toward bringing about a desired impact upon a specified audience,
- to learn self-directed learning skills in the areas of planning, organization, resource utilization, time management, decision making, and self-evaluation,
- to further develop task commitment, self-confidence, and feelings of creative accomplishment.

In the Renzulli Learning System, the Type III component can emerge from almost any of the options that students choose to pursue. They can, for example, get an idea for what they might like to learn more about by becoming involved in a virtual field trip, or a real field trip. They might find an idea from a creativity training exercise or critical thinking activity. The most logical way for students to become involved in a Type III project is by pursuing an independent study or by becoming involved in a contest or a competition. We have also found that students may become interested in doing in-depth research by using any of the other components of the RLS such as special topic websites, Fiction, Non-Fiction, and How-to books, Summer Programs, On-Line Activities and Research Skills. There are also numerous options in Renzulli Learning for students to pursue Type III studies in specialized areas (e.g., Math League, Invention Convention, National History Day Competition, to mention only a few of the hundreds of available options).

Type III Enrichment is different from the types of projects and reports that students typically do in connection with their regular schoolwork. The best way to describe this difference is to list the three things that make a problem "real" to a student. First, real problems are based on a sincere interest of the student rather than one assigned by the teacher. It is something the student *wants* to do rather than something he or she is assigned to do. You may discuss and provide guidance in helping a student find and focus a problem, and the problem might be within the general curriculum area you are covering, but the subject or theme on which a student chooses to work must represent a personalization of the topic for him or for her.

The second distinguishing feature of working on a real problem is that the student will use the methods of investigation of the practicing professional. They're going to do what the real

geologist, scenery designer, or community activist does, even if it is at a more junior level than an adult professional working in one of these fields. This focus will help to distinguish a *bona fide* Type III project from the ritualistic reports that students typically complete by merely gathering and summarizing information from reference books or Internet sites. The most powerful tools for giving students the know-how of authentic methodology, such as *How-To Books For Conducting Research and Creative Projects*, can be found in the Enrichment Database under the category How-To Books. Take a quick tour of this enrichment category to get a "feel" of the many exciting books that provide the skills for helping students become practicing professionals. And think about using some of the material in these books for whole-class and small group lessons on teaching research and investigative skills. We have found that teaching young people a practical data gathering technique such as questionnaire design, for example, will motivate them to identify a problem that allows them to use their new skill on a problem in which they have a personal interest.

The third characteristic of a real problem is that it is always geared toward an audience other than or in addition to the teacher. In the adult world, practicing professionals carry out their work because they want to have an impact on one or more relevant audiences—others who voluntarily attend a performance, read a newsletter, or go to a science fair. Presenting to classmates occasionally may qualify as a real audience, but such presentations should be viewed more as practice sessions for more real world settings such as a presentation to the local historical society, submission of one's writing to a magazine that publishes poetry or short stories, or entering an invention contest. The enrichment category entitled *Contests and Competitions* will give you and your students many ideas about opportunities for audiences in all areas of student interest. And the *Websites* category includes many organizations and professional societies that produce journals and newsletters where high quality student products might be included. These organizations are also excellent sources for resources in specialized areas of study, and some of them even provide on-line mentoring services for students.

The goal of Type III Enrichment is to transform the role of the student from a person who merely acquires information to a role in which she or he is thinking, feeling, and doing like the practicing professional by actually engaging in *authentic* activities. In reflecting on the characteristics of authentic activities described by researchers, ten broad design characteristics that relate to on-line learning have been identified by Reeves, Herrington, & Oliver (2002). These characteristics are:

- Authentic activities have real-world relevance: Activities match as nearly as possible the real-world tasks of professionals in practice rather than decontextualized or classroom-based tasks.
- Authentic activities are ill-defined, requiring students to define the tasks and sub-tasks needed to complete the activity: Problems inherent in the activities are ill defined and open to multiple interpretations rather than easily solved by the application of existing algorithms. Learners must identify their own unique tasks and sub-tasks in order to complete the major task.
- Authentic activities comprise complex tasks to be investigated by students over a sustained period of time: Activities are completed in days, weeks and months rather

than minutes or hours. They require significant investment of time and intellectual resources.

- Authentic activities provide the opportunity for students to examine the task from different perspectives, using a variety of resources: The task affords learners the opportunity to examine the problem from a variety of theoretical and practical perspectives, rather than allowing a single perspective that learners must imitate to be successful The use of a variety of resources rather than a limited number of pre-selected references requires students to detect relevant from irrelevant information.

- Authentic activities provide the opportunity to collaborate: Collaboration is integral to the task, both within the course and the real world, rather than achievable by an individual learner.

- Authentic activities provide the opportunity to reflect: Activities need to enable learners to make choices and reflect on their learning both individually and socially.

- Authentic activities can be integrated and applied across different subject areas and lead beyond domain-specific outcomes: Activities encourage interdisciplinary perspectives and enable students to play diverse roles thus building robust expertise rather than knowledge limited to a single well-defined field or domain.

- Authentic activities are seamlessly integrated with assessment: Assessment of activities is seamlessly integrated with the major task in a manner that reflects real world assessment, rather than separate artificial assessment removed from the nature of the task.

- Authentic activities create polished products valuable in their own right rather than as preparation for something else: Activities culminate in the creation of a whole product rather than an exercise or sub-step in preparation for something else.

- Authentic activities allow competing solutions and diversity of outcome: Activities allow a range and diversity of outcomes open to multiple solutions of an original nature, rather than a single correct response obtained by the application of rules and procedures (p. 565).

To help students understand the difference between an authentic Type III and the more traditional kinds of reports that they typically do in school, we have developed The Wizard Project Maker, a completed sample of which is attached. This form also highlights the specific ways in which teachers can provide guidance in helping students find and focus a problem, examine potential outlets and audiences, and obtain the necessary resources to carry out their investigative activities. Blank copies of this form can be downloaded at the RLS web site. The teacher's role in this type of enrichment becomes more like a coach and guide-on-the-side rather than a disseminator of knowledge. The teacher's role is an active one, but requires minimal time because it does not require large amounts of face-to-face instruction. You can learn more about the role that teachers play in facilitating Type III Enrichment by reviewing the short article on this topic in the **Teacher Resource** section of this web site.

One of the questions that teachers frequently ask is, "Where will students find the time to do Type III projects?" All students can use the Renzulli Learning System, but we have found that above average ability students—those who can master the regular curriculum at a faster pace than others—can "buy" some time for enrichment activities through a sub-component of the RLS called Curriculum Compacting. Essentially, compacting is a process through which the teacher

uses formal and informal assessment at the *beginning* of a unit of study to determine which students have already mastered basic skills, and therefore do not need the same amount of practice material as others. Indeed, it is sometimes this excessive practice of skills already mastered that causes many of our more able students to become bored with school! And in subjects such as science and social studies, students may not know the material to be covered, but are eager to select an option that allows them to cover it at an accelerated pace. Many students are especially eager to select this option if they know that it will "buy" them the time to work on Type III enrichment as well as other options in the RLS. We have provided a brief article on the steps teachers use in Curriculum Compacting in the **Teacher Resource** section of this web site.

The Value Added Benefits of Learning *With* Technology

The conditions of learning have changed dramatically for young people going to school today. Don Leu and his team of New Literacies researchers at the University of Connecticut (Leu, Kinzer, Coiro, & Cammack, 2004) have pointed out that the Internet is this generation's defining technology for literacy and learning; and that profound changes have already taken place in higher education, adult learning and the workplace, all situations for which we are preparing the young students who are in our classrooms today. There was a time when teachers and textbooks were the gatekeepers of knowledge, but today virtually all of the world's knowledge is accessible to any student who can turn on a computer and log into the Internet. One of the dangers of a content abundant resource such as the Internet, however, is that we might be tempted to simply use it to cram more information into students' heads! But by applying a learner-centered pedagogy rather than a traditional drill-and-practice approach, we can harness the power of the Internet in a way that respects principles of high-level learning developed by the Task force on Psychology of the American Psychological Association (1997). A crucial question, therefore, is will we use this information wisely? Or will we simply turn the powerful resources available through the Internet into electronic work sheets, test-prep tutorials, and on-line courses that adhere to the same prescriptive model for learning that almost all reform initiatives have followed thus far—a model that has indeed left so many young people bored, disengaged and behind? Or will the new technologies be the workhorse that can finally allow teachers to truly differentiate learning experiences for all students? These technologies now make it possible to apply to all students the pedagogy typically used with high achieving students. In an article entitled "A Rising Tide Lifts All Ships" (Renzulli, 1998), I pointed out how a "gifted education approach" can improve engagement and achievement for all students.

With almost unlimited access to the world's knowledge, a critical issue for educators is selecting the software and providing the training that will help young people use this access safely, efficiently, effectively, and wisely. Leu and his colleagues define the five major skill sets of the new literacies as follows:

1. Identifying Important Questions
2. Locating Relevant Information
3. Critically Evaluating Information
4. Synthesizing Information
5. Communicating Effectively

In addition to improved academic achievement and opportunities for creative productivity, which are the major goals of the Renzulli Learning System, there are a series of metacognitive tools that result from computer based learning environments. Metacognition is generally defined as the monitoring and control of one's own thinking processes. Metacognitive tools are skills that help students organize and self-regulate their learning so that they can make the most efficient use of time, resources, and the cognitive skills that contribute to higher levels of thinking. Metacognition involves problem-solving skills such as exploring alternative options and strategies in open-ended problem situations; and applying critical thinking skills such as examining the sources of evidence, the logic of arguments, and how to find and use reliable information. Training and experiences in metacognitive skills may be the single biggest difference between the education provided in high and low achieving schools!

Several researchers studying constructivist models of learning and metacognition have developed or modified traditional theories of learning to explain the role of computer environments in mediating the interactions between and among the cognitive, metacognitive, affective, and social processes that are involved in learning complex material (Bandura, 1986; Corno & Mandinach, 1983; Pintrich, 2000; Schunk, 2001). Promising results have emerged from these new developments in theory and research on the ways in which computer learning environments facilitate metacognitive skill development.

The Internet can also be a good educational tool for hard-to-reach populations. Researchers from Michigan State University examined the positive effects of home Internet access on the academic performance of low-income, mostly African American children and teenagers involved in a home Internet project. In this research, 140 children aged 10–18 years old (83% African American and 58% male) living in single-parent households (75%) with a $15,000 or less median income were followed for a two-year period to see whether home Internet use would influence academic achievement.

The children who participated in the project were online for an average of 30 minutes a day. Findings indicate that children who used the Internet more had higher standardized test scores in reading and higher grade point averages (GPAs) at one year and at 16 months after the project began compared to children who used the Internet less, said lead author Linda Jackson, PhD. Internet use had no effect on standardized test scores in math.

"Improvements in reading achievement may be attributable to the fact that spending more time online typically means spending more time reading," said Dr. Jackson. "GPAs may improve because GPAs are heavily dependent on reading skills," she added.

An even more promising trend is emerging as computer use evolves from traditional e-learning (i.e., taking an on-line course or developing basic skills through computer assisted instruction) to inquiry based software that focuses on the *application* of knowledge to creative productivity and investigative research projects that promote high levels of student engagement. Students learn the basic difference between to-be-presented information that characterizes traditional instruction and just-in-time information, which is the hallmark of problem-based learning. Skills such as: problem finding and focusing; stating research questions; task understanding and planning; identifying appropriate investigative methodologies; searching,

skimming, selecting, and interpreting appropriate resource material; identifying appropriate outlets, products, and audiences; and preparing effective communication vehicles are all value added benefits when the learning theory that underlies the Enrichment Triad Model is combined with the vastness of resources available through the internet.

The Renzulli Learning System—Summing It All Up

The Renzulli Learning System is designed to be an aid to busy teachers who seek the tools for effective differentiation as they go about the process of dealing with a broad range of individual differences, diverse student needs, and increased pressures to improve student achievement. Through the use of technology and an approach to learning that is the opposite of highly prescriptive instruction, the RLS provides teachers with the "dozen teaching assistants" that every teacher would like to have in his or her classroom. The main goal of the RLS is to simultaneously increase achievement and enjoyment of learning by making available an inexpensive, easy-to-use, research-based system that promotes student engagement. Although student engagement has been defined in many ways, we view it as the infectious enthusiasm that students display when working on something that is of personal interest and that challenges them to "stretch" for the use of materials and resources that are above their current comfort level of learning. Research on the role of student engagement is clear and unequivocal—high engagement results in higher achievement, improved self-concept and self-efficacy, and more favorable attitudes toward school and learning. Numerous students involved in our field tests of the RLS summed it up with one word—"Awesome!" Interested readers can examine the RLS by going to https://renzullilearning.com/ and clicking on Test Drive Renzulli Learning.

References

Ainley, M. D. (1993). Styles of engagement with learning: Multidimensional assessment of their relationship with strategy use and school achievement. *Journal of Educational Psychology, 85*(3), 395–405.

APA Work Group of the Board of Educational Affairs. (1997). *Learner-centered psychological principles: A framework for school reform and redesign.* American Psychological Association.

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory.* Englewood Cliffs, NJ: Prentice Hall.

Corno, L., & Mandinach, E. B. (1983). The role of cognitive engagement in classroom learning and motivation. *Educational Psychologist, 18*(2), 88–108.

Greenwood, C. R. (1991). Longitudinal analysis of time, engagement, and achievement in at-risk versus non-risk students. *Exceptional Children, 57*(6), 521–536.

Leu, D. J., Jr., Kinzer, C. K., Coiro, J., & Cammack, D. (2004). Toward a theory of new literacies emerging from the Internet and other information and communication technologies. In R. B. Ruddell & N. Unrau (Eds.), *Theoretical models and processes of reading* (5th ed., pp. 1568–1611). International Reading Association.

Pintrich, P. R. (2000). The role of goal orientation is self-regulated learning. In M. Boekaerts, P. Pintrich, & M. Zeidner (Eds.). *Handbook of self-regulation* (pp. 452–502). New York: Academic.

Reeves, T. C., Herrington, J., & Oliver, R, (2002). Authentic activities and on-line learning. In A. Goody, J. Harrington, & M. Northcote (Eds.), *Quality conversations: Research and development in higher education* (Vol. 25, pp. 562–567). HERDSA.

Renzulli, J. S. (1977). The Enrichment Triad Model: A plan for developing defensible programs for the gifted and talented. *Gifted Child Quarterly, 21*(2), 227–233.

Renzulli, J. S. (1998). A rising tide lifts all ships: Developing the gifts and talents of all students. *Phi Delta Kappan, 80*(2), 104–111.

Renzulli, J. S., & Reis, S. M. (1994). Research related to the Schoolwide Enrichment Triad Model. *Gifted Child Quarterly, 38*(1), 7–20.

Schunk, D. H. (2001). Social cognitive theory of self-regulated learning. In B. Zimmerman & D. H. Schunk (Eds.). *Self-regulated learning and academic achievement: Theoretical perspectives* (pp. 125–152). Mahwah, NJ: Lawrence Erlbaum.

Authors

J. S. Renzulli is with The National Research Center on the Gifted and Talented, University of Connecticut, Storrs, CT, 06269, USA (e-mail: joseph.renzulli@uconn.edu).

S. M. Reis is with The National Research Center on the Gifted and Talented, University of Connecticut, Storrs, CT, 06269, USA (e-mail: sally.reis@uconn.edu).

The Wizard Project Maker™ for Individual and Small Group Work

Name(s): Liza

Teacher: Ms. Latino
School: Southeast School

Start Date: Completion Date:
January 15, 2006 - June 15, 2006

Dates for Progress Meetings with My Teacher:
2/21/06 3/11/06 4/2/06 5/13/06

Project Description: Write a brief description of the project, problem, topic, or interest area that you want to learn about and study. What do you hope to find out or learn?

I love theater and want to try to direct and produce a play starring some of my friends and classmates. I will have to find some of the following kinds of information.

1. What is a good play for elementary students to perform?
2. What types of tasks will I have to do to successfully direct a play for kids?
3. What type of play will I select? Will I have to pay for it? What other tasks are involved in directing and producing a play?

Intended Project(s): What form or format will the final project take? How, when, and where will you share and communicate the results of your project with other people? In what ways will you share your work (competition, on-line magazine, art show, performance, science fair, etc.)

1. Direct and produce a play for my class and if it goes well, the school and even the community.
2. Design and build a set for the play; learn about lighting!
3. Design and produce a program for the play.

Interest Areas for this Project
-------------Check All That Apply---------------
❍ Architecture ● Arts (drawing & pointing)
❍ Athletics/Sports/Fitness
❍ Business/Management ❍ Building Things (robots, models) ❍ Creative Writing
● Computers/Technology/Gaming
● Drama/Performing ● Graphic Design/Animation ❍ Foreign Languages ❍ Geography ❍ Helping in the Community
● History ● Journalism ❍ Mathematics
❍ Music

What Format Will Your Project Take?
--------------Check All That Apply--------------
● Artistic ● Audio/video/DVD O Display
● Drama/Performance O Musical
● Photographic
● Written ❍ Service/Leadership
● Technology/Computer
❍ Oral/Discussion (speech, teach, presentation) ❍ Using my hands to make/build something ❍ Other:

Getting Started: What are the first steps you should take to begin your work? What types of information do you need to find in order to do your work? Where will you get the information you need? What questions do you have that you need answered in order to start your work? What help do you need from your teacher or parents? List that information here.

1. Learn how to direct a play and how to produce one.
2. Conduct research about children's plays and drama and find specific information about which plays might be good for my class and for me
3. Locate information on how to create sets and produce a play.

Project Skills, Resources and Materials I Will Need: List the Renzulli Learning™ resources here along with other resources (people, organizations, businesses, etc.) you have located that will help you with your work. Include websites, contact names, addresses and phone numbers, lists of the materials you will need, etc.

Drama Map
This site helps you to organize your search for plays and other dramatic material. You can choose to organize your knowledge by character, setting, conflict, or resolution. This will help you keep information neat and organized.

https://www.readwritethink.org/classroom-resources/student-interactives/drama

The American Century Theater
The American Century Theater
P.O. Box 6313
Arlington, VA 22206
703-553-8782

Dedicated to Great, Important & Neglected American Plays and Playwrights of the 20th Century! Ten years ago, a group of us started The American Century Theater because we felt that great Twentieth Century American plays and playwrights were getting short shrift in this area. Thanks to the indispensable assistance and support of Arlington County, we were provided with the opportunity to discover if enough other theater-lovers felt the same way.

http://americancentury.org/

At the site below, I will be able to consider directing and producing Snow White with my friends and classmates. I will need to also find out how I might earn the money to be able to buy the rights to stage this show. Maybe I can charge a minimum amount for tickets? I can also do some more searching for plays in the school library.

https://childrenstheatreplays.com/_a-snow_white_kids_play.htm

We can also look at other plays that will be available at this site. I will have to check with my teacher as some of these will require a small fee that I can make from ticket sales.

http://playsandmusicalsnewsletter.pioneerdrama.com/

I can also take an online journey through Shakespeare's life to learn about his writing and access some of it online. After all, he was the greatest playwright who ever lived.

http://www.tramline.com/tours/lit/shake/_tourlaunch1.htm

Try Out These Theater Games
If you are interested in drama this is the activity for you. Practice your acting skills by playing these games in a group. Learn the art of being a mime or act out roles that you draw from a pile.

https://archive-it.org/

How-to books:

Acting and Theatre
Author: Cheryl Evans and Lucy Smith Copyright 1992
64 pages
ISBN: 0-7460-0699-3
Grade Level: 4-12

Introduce students to every aspect of the theatrical world! This book illustrates and explains some of the ways actors train and rehearse, as well as the practical arts of set, prop, and costume design and the technical basics of lighting and sound.

Break a Leg!: The Kid's Guide to Acting and Stagecraft by Lise Friedman and Mary Dowdle (Workman Publishing Company, 2002) ISBN: 0761122087
A complete drama course for kids in a book. BREAK A LEG! teaches budding thespians everything they need to know about stagecraft and the production of performances, in home or out. There are sections on body preparation, including warm-ups, stretches, and breathing exercises. Theater games, improv, miming, and other fun ways to develop technique. Important acting skills, such as voice projection, crying on command, learning accents, and staging falls and fights without getting hurt.
The performance: analyzing scripts, building a character, what to expect from rehearsals, and overcoming stage fright. A backstage look at blocking, lighting, and other technical aspects of theater production. And for the fun of costumes and make-up, a 16-page color insert. In addition, it covers legends and lore (Why is Macbeth cursed? Why do we say "break a leg?") and offers dozens of must-see movie recommendations. Plus, for the ambitious, talented, and just plain curious, there's advice on how to make a career of it all, with tips on agents and auditions and getting jobs in theater, film, TV, and radio.

Intended Audience(s): Who would be most interested in your work or project? Consider organized groups (clubs, organizations, societies, teams) at the local, state, regional and national levels, and list them here. Also consider contests, places where your work might be displayed or published, and web sites that include work done in your area of study. Include contact names, phone numbers, addresses and email, along with meeting times and locations.

1. Class project
2. School Play
3. Town Play (open to public)
4. If I decide to write my own play, I can submit it to the following using Renzulli Learning:

https://schooltheatre.org/

Create a Play for Thespian Playworks
Thespian Playworks 2343 Auburn Avenue
Cincinnati, OH 45219

Activity Type: Writing a play
Bring out the writer and director inside of you by entering this contest. Write a short (thirty minutes or less) play and send it in for review. If the judges select your work for the Thespian Festival, you will join them during the workshops that bring your play to life. In order to be eligible you must be enrolled in a high school and a member of the Thespian Society.

For Completion By Teacher *(Optional)*
List of state standards addressed with this project: