

The Autonomous Learning Model for High School Programming

BY GEORGE BETTS

It was a perfect time and place. In the fall of 1973, Arvada West High School teachers and administrators, in Arvada Colorado, wanted to meet the needs of all their students. The principal was the school's leader for change. Task forces were formed, parents and students were consulted, and topics centered around necessary changes to enhance education.

I was hired to teach students who were not succeeding in school. My background is in psychology and counseling. On my contract it stated that one of my assignments was to work with "disenchanted students." I had no idea who they were or where to find them. My task was to locate students who were dropping out of school, and those who weren't passing classes. The main problem was that the students were not physically at school, but were either in the park, at home, or at the local Burger King.

After the students returned to school, an alternative program was developed which was designed to facilitate their total growth, not just as students but throughout life. The approach worked. Students began in this two-hour program and then started taking appropriate classes from selected teachers. We learned how to modify our teaching to meet the needs of the students.

We found many different types of non-achieving students. Some were in special education and others had developed attitudes that did not allow them to be successful. But some were especially intriguing. They were bright but not achieving. They loved to learn, but not what was being taught at school.

At the same time the administrative leaders were now learning about new concepts concerning gifted children and gifted education. They hired the National/State Leadership Training Institute for the Gifted and Talented (1976-78) to provide on-going staff development for school personnel in the district who were interested in learning more about the gifted.

The principal encouraged participation of teachers and administrators in this project. A mathematics teacher, Jolene Kercher, was selected for this project. She worked not

with dropouts but with the successful students. Jolene was an outstanding teacher. She was also organized and sequential, and she appealed to successful gifted students. Having two teachers with different content areas, learning styles, and experiences proved to be one of the major keys to the success of this approach.

A new project was developed at Arvada West that targeted achieving and non-achieving students. Jolene and I had a new chal-



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lenge in teaching, something we had never encountered before: we were instructed to modify the system, not the students; to develop the program *with* the students, not *for* them; and to be *facilitators of learning* and not *dispensers of knowledge*.

This new style of teaching was foreign to both the students and us. Our approach didn't work at first, and everyone struggled. The students didn't like the freedom and we didn't think they were gifted! But the principal stated that the program would continue, so we all persevered.

By the second year, the students and teachers had learned to work together. The students were taking ownership of their learning. As they assumed this new role, the teach-

ers were becoming facilitators in the process. The Autonomous Learner Model (ALM) was truly developed by and for the gifted.

Betts and Kercher (1999, p. 14) state that "an autonomous learner, by definition, is one who solves problems through a combination of divergent and convergent thinking, and functions with minimal external guidance in selected areas of endeavor."

Standards of the Autonomous Learner Model for the Gifted and Talented

The Standards of the Autonomous Learner Model (Betts & Kercher, 1999) are fundamental to the program and underlie the basic principles for optimizing ability. The aim is to:

- develop self-concept and positive self-esteem
- comprehend one's abilities in relation to self and society
- develop skills to interact effectively with peers, siblings, parents, and other adults
- increase knowledge in a variety of areas
- develop critical and creative thinking skills
- develop decision-making and problem-solving skills
- integrate activities which facilitate the cognitive, emotional, social, and physical development of the individual
- develop individual passion area(s) of learning
- demonstrate responsibility for self learning in and out of the school setting
- ultimately become responsible, creative, independent, life-long learners

Basic Principles of the Autonomous Learner Model for the Gifted and Talented

The Autonomous Learner Model (Figure 1) (Betts, 1985; Betts & Kercher, 1999) was developed based on information gathered from many sources. These included consultation with national leaders, reviews of pertinent literature, the training of teachers, and most importantly, the experiences of learners, teachers, administrators, and parents who worked together to build a new approach which would meet the diversified needs of learners. The basic principles of the Autonomous Learner Model include:

- Emphasis is placed on the cognitive, emotional, social, and physical development of the individual.
- Self-esteem is encouraged and facilitated.
- Social skills are developed and enhanced.
- The regular classroom is the central support of programming.
- Pull-out and resource programs and special courses are necessary components.
- Curriculum is differentiated by teachers.
- Curriculum is differentiated by learners.
- Curriculum is based on the interests and passions of learners.
- Learners are involved in guided open-ended learning experiences.
- Responsibility for learning is placed on learners.
- Experiences which allow students to become life-long learners are needed.
- Teachers are facilitators of the learning process, as well as dispensers of knowledge.
- Learning is integrated and cross-disciplinary.
- Learners develop a broader foundation of basic skills.
- Higher-level, critical, and creative thinking skills are integrated, reinforced, and demonstrated in the learning process.
- Learners develop appropriate questioning skills.
- Varied and divergent responses are sought from learners.
- Content topics are broad-based, with emphasis on major themes, problems, issues, ideas, and topics.
- Time and space restrictions for schools are removed for in-depth learning.
- Learners develop new and unique products.
- Learners use varied resources in the development of in-depth studies.
- Cultural activities and enrichment provide new and unique growth experiences.
- Seminars and in-depth studies are essential components of the learning process.
- Mentorships provide adult role-modeling, active support, and individual instruction and facilitation.
- Completions and presentations of in-depth studies are integral in the learning process.
- Assessment of self-development and learner-created products is necessary and worthwhile.

New principles are added as they are discovered through involvement in the program. After studying the basic principles, either alone or in small groups, educators, parents, and learners should review each principle and ask the following questions: Is this included in our approach for the gifted and talented? Why or why not? Should this principle be included in our approach? Why or why not? How will our approach for gifted education be modified to include learning through this principle?

The Autonomous Learner Model for the Gifted and Talented

Since the first publication of the Autonomous Learner Model by Betts and Knapp in 1981, the model has been well received. "The goal of the model is to facilitate the growth of students as independent, self-directed learners, with the development of skills, concepts, and positive attitudes within the cognitive, emotional, social, and physical domains" (Betts & Kercher, 1999, p 43).

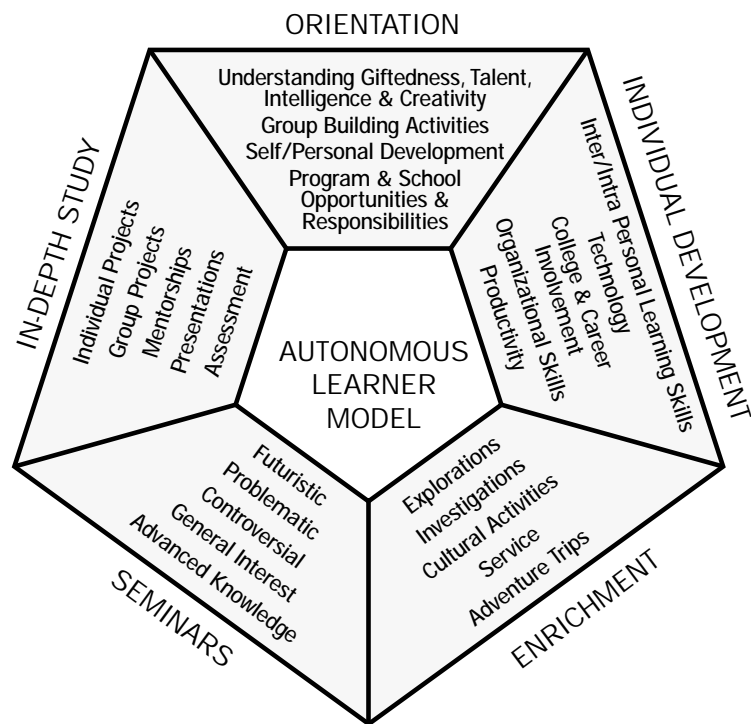


Figure 1. Autonomous Learner Model (1996 by George Betts & Jolene Kercher)

In 1996, the Autonomous Learner Model (Figure 1) was evaluated and revised to better meet the diversified needs of the gifted and talented. The model contains five major dimensions:

Dimension One: Orientation

This dimension of the model is crucial to the development of the autonomous learner because basic information is presented as the foundation for understanding self, the importance of working as a group, the process of lifelong learning and what is available for the development of the total individual. This dimension contains four areas:

Understanding giftedness, talent, intelligence, and creativity. Many students, educators, and parents do not fully comprehend the concepts of giftedness, talent, intelligence and creativity. Theories and definitions of these concepts are presented to the students, followed by discussions and activities.

A major unit in this area is entitled "Night of the Notables." It is based on *Images of Greatness*, by Katha Williams (1989). In this unit students select people who they believe are gifted and have become producers of knowledge. After they make their selections, the students complete research about their people, develop bio-riddles, construct learning centers, and actually *become* their people for the "Night of the Notables," complete with costume. Teachers, families, and members of the community are invited to spend the evening with these esteemed people.

During a recent "Night of the Notables" at Brentwood Middle School, Greeley, Colorado, students chose an eclectic array of people for their projects—from athletes and celebrities to scientists and statesmen. From Albert Einstein and Mahatma Gandhi, to Sally Ride and Thomas Jefferson, students played their parts demonstrating their research results.

The students complete a final activity. They present their own definition of what it means to be gifted. Their final product may be oral,

visual, written, or kinesthetic. Other class members, educators, and parents are invited to this synthesizing activity.

Group building activities. The ALM is established to foster students in their ability to work together effectively as a group. Group process, group roles, and group strategies are essential in this area of Orientation. According to Virginia Satir, a world-renowned family therapist, "The non-cognitive comes before the cognitive." The students learn group-dynamic skills and how to facilitate a positive, nurturing environment.

Self-personal development. How do you describe yourself? What is your self-concept and self-esteem? Do you understand your own gifts and talents or are you more in tune with your weaknesses? How will you develop your abilities in the next few years after school? These and many others questions are explored and answered at this point in the model. Understanding of self may lead to a better development of ability and potential.

Program and school opportunities and responsibilities. Time is spent learning and discussing the Autonomous Learner Model. It is essential that the learners comprehend the model and can provide information about the model for their teachers and parents. Without a clear understanding of the ALM, students do not understand the direction and the journey of life-long learning.

There is an important distinction in terminology in the ALM. Students must comprehend the difference between the terms *student* and *learner*; and *teacher* (dispenser of knowledge) and *facilitator* (facilitator of the learning process). This transition process begins in Orientation and is not completed until learners are involved in the Seminars and In-Depth Study dimensions (Figure 2). In the Orientation dimension, the students are students and the teachers are dispensers of knowledge. The roles change as students progress through the different dimensions until the student becomes a learner and the teacher

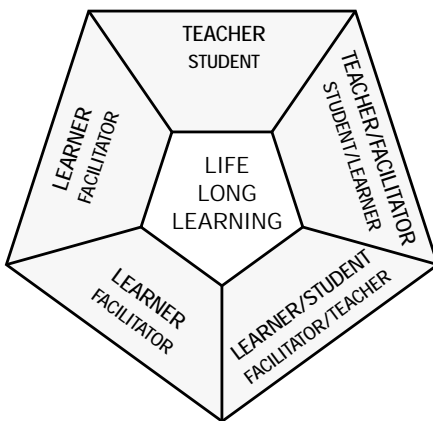


Figure 2. Changing Roles Within the ALM (1999 ALPS Publishing)

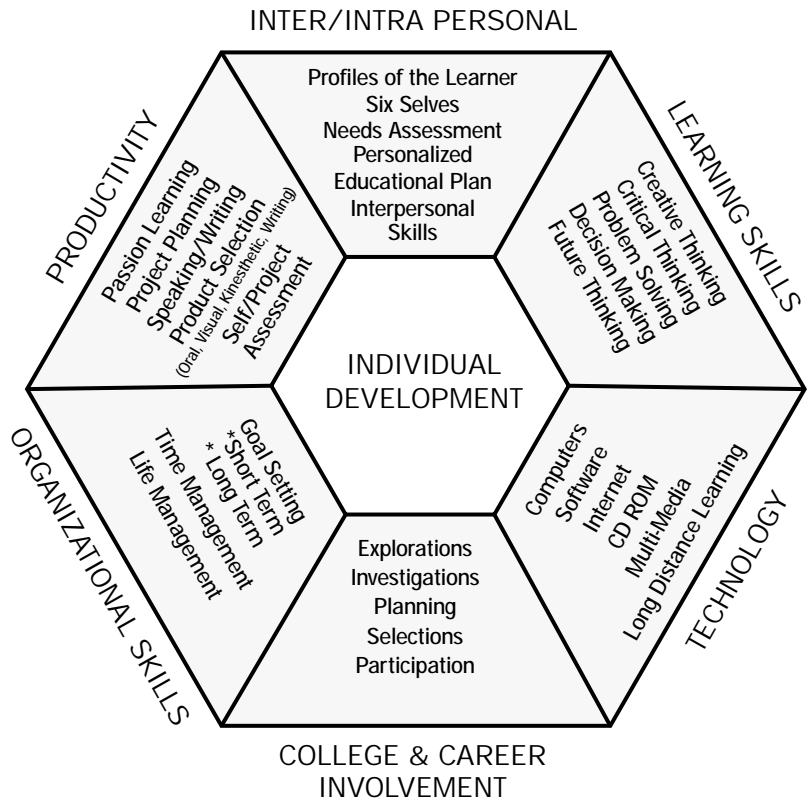


Figure 3. Individual Development Dimension of the ALM (1996 George Betts & Jolene Kercher)

a facilitator of learning. The ideal student is both a student and a learner. The ideal teacher is both a dispenser of knowledge and a facilitator of the learning process.

Another goal of this area of Orientation is to let students know how they can be involved in the school and community for the next three years. A Program Search is completed by the staff and formulated for the students. It contains ALM courses, content classes, advanced placement and honors courses, competitions, special school and community events, and resource people (for possible mentorships). At the end of this segment of Orientation, students are responsible for developing the first draft of their own three-year personal educational plans. The plans are presented to the teacher and a small group of students, and reviewed every semester.

Dimension Two: Individual Development

The second dimension of the ALM is Individual Development (Figure 3) which was designed to give students the appropriate skills, concepts, and attitudes necessary for their development as life-long learners. This dimension contains six specific areas:

Inter/intra personal. This area is an extension of Self/Personal Development from Orientation. The development of self-concept and self-esteem, as well as the development of the skills to interact effectively with others is an on-going pursuit. Therefore, the authors of the ALM include this area in Dimension Two as well as in Dimension One.

Learning skills. The learning skills area of Individual Development focuses on the skills necessary to function as an autonomous learner. Study skills are more individualized while specific math skills are content specific. Bloom's Taxonomy (1974) is included as a basis for teaching thinking skills. Additional approaches include critical and creative thinking, and problem-finding and problem-solving.

Technology. For the 1981 ALM model, the use of computers was included as a mere concept. By 1996, it was evident that technology would be a major area for Individual Development. Today technology includes computers, computer programs, programming, Internet, CD Rom, and distance learning. After information is gathered through the use of technology, emphasis should be placed on the synthesis of information, experience, and previous knowledge by each learner.

College and career involvement. In this area of Individual Development, students seek knowledge concerning college and career involvement. Specific activities include a directed study with a post-high school planning questionnaire, attendance at college information fairs, interviews with college representatives, and the completion of a college application and resume.

Students also complete a career-planning questionnaire, an interview, participation in career fairs, and completion of a product which outlines three to five directions they may pursue in their career choices. This may include oral, visual, written, or kinesthetic products.

Organizational skills. Organizational skills are an essential component of life-long learning. Students learn different methods of organization and develop an approach for themselves. Day-to-day organization is important, but so is life management. Daily, monthly, and yearly Life-Management Wheels are completed to facilitate self-understanding as it relates to learning.

Productivity. Tannenbaum (1983) states that gifted students have the potential to become “producers of knowledge.” To become a producer requires the development of many different products. Table 1 displays a partial list of the oral, kinesthetic, and written products available through the ALM. Students are exposed to the different types before the products are developed.

Dimension Three: Enrichment

The purpose of the *Enrichment Dimension* of the ALM is to introduce learners to the concept of *learner-based content*—to go beyond teacher-based content and teach learners to do what teachers do every day—to develop their own content, processes and products. Learning to write curriculum is essential for autonomous learning. The *Enrichment Dimension* contains five specific areas:

Explorations. Explorations are short-term and on-going. What new ideas do you want to pursue? What do your parents (or grandparents) know that they could teach you? What are your librarian’s three favorite books? Read them.

Investigations. After successfully completing several explorations, students are taught about the next level of learning, *Investigations*. An investigation is the next step in being able to complete an In-depth Study. Students are taught the steps and skills necessary for independent inquiry. Forms are used that focus on the title and description of the investigation, specific activities, and mini-product descriptions.

The student receives instruction and direction from the teacher in order to develop a successful investigation.

Cultural activities. This area is developed to provide learners with opportunities to go beyond the scenes, to learn more than they normally would at a museum, play, poetry reading, or dance recital. Learners make arrangements to meet the people involved before or after the presentation or tour. They come prepared with questions which will add to their understanding of the cultural activity.

Three activities are completed each semester, closing with a cultural activity for the entire class.

Service. A major component of *Enrichment*

is the concept of service. This area provides the learners opportunities to understand themselves and their relationships with others through service activities. This area was developed to teach about humanitarianism and its impact on society. Activities include working for an agency, raising food and money for the poor, meals for shut-ins, or spending time with an elderly person.

For closure, the group may have a dinner or party for a certain group of people within their own community who need special support.

Adventure trips. “Why don’t we go to the Grand Canyon?” Okay, how would we get there? Why would we go? What do we want to learn? What resources are available? How much money will we need? Who will be our chaperons?

Such questions must be asked and answered before the learners embark on an adventure trip. It could be for one day, a week, or longer. The purpose is for learners, interested parents, and teachers to work together to plan a meaningful trip. The trip is divided into three components. The first is preplanning, the second is participating in the actual trip, and the third is assessment of the experience.

Dimension Four: Seminars

Seminars are developed by learners and facilitated by teachers. Seminars consist of the selection of a topic of importance to the learners, development of the basic seminar, and assessment of the seminar by learners, the teacher, and other class members. *Students* are now operating in the role of *learners* and *teachers* are now *facilitators* of the learning process.

Seminars focus on the following areas :

1. futuristic
2. problematic
3. controversial
4. general interest
5. advanced knowledge

The *Seminar* is designed for students to demonstrate their abilities to be learners and to work together in small groups. Two weeks are used to develop the seminar, while the actual seminar is 30 minutes to an hour. Topics have included games from other cultures, mental disorders, parapsychology, women in history, impeachment, creativity, man and nature, and conspiracies and theories.

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Table 1. Examples of oral, verbal, kinesthetic, and written products available through the ALM

Editorial	Diorama	Web Page
Survey	Individual Presentation	Interview
Recital	Power Point Presentation	Group Presentation
Choreographed Dance	Debate	Sculpture
Questionnaire	Mime	Pottery

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Dimension Five: In-depth Study

Dr. E. Paul Torrance (1983) described concepts that most teachers know on some level but have never been able to systematically implement. His beliefs included:

1. Don't be afraid to fall in love with something and pursue it with intensity and depth.
2. Know, understand, take pride in, practice, develop, use, exploit, and enjoy your greatest strengths.
3. Learn to free yourself from the expectations of others and to walk away from the games that others try to impose upon you. Free yourself to "play your own game in such a way that you make good use of your gifts. Search out and cultivate great teachers or mentors who will help you accomplish these things" (p 78).

The teachings of Torrance are incorporated into the ALM for students to move in the direction of becoming life-long learners. His concepts are discussed with the students in the implementation of the Autonomous Learner Model.

Individual or group projects. By Dimension Five, *In-depth Study*, the students are truly learners and possess the skills, concepts, and attitudes necessary to function as a learner and have been successful in completing *Explorations* and *Investigations*. Most learners elect to work alone in this dimension while some groups do form after completion of *Seminars*. For this experience, groups should be no larger than three learners, working directly with the teacher as facilitator of the learning process.

Mentorships. Whenever possible, learners are encouraged to work with mentors. The question is, how will teachers find appropriate mentors? The answer is that teachers do not find mentors, the learners do. At the high school level, the learner seeks and develops a mentorship. Dimension Five is for those who are now *autonomous learners*.

Presentations. It is essential that learners include presentations of their *In-depth Studies* throughout the study. Some in-depth studies last two or three months while others are completed after two years of involvement. Short presentations are given throughout a

grading period while the final product presentation is made at the conclusion of the study.

Assessment. Am I autonomous? Was I able to plan a project, participate in the project, complete the project, and assess the project? Assessment of the learner, the process, and the product are integral components of the learning process taught through the Autonomous Learner Model.

The Three Essential Levels of Learner Differentiated Curriculum within the Autonomous Learner Model

Most learners are involved in three major levels of learning within the Autonomous Learner Model. *Explorations* begin the process, *Investigations* develop a more thorough knowledge base, and *In-depth Studies* encourage and facilitate passion learning. *Explorations* and *Investigations* are areas of Dimension Three, *Enrichment* and *In-depth Study* is Dimension Five of the ALM.

Through teacher and mentor relationships, learners develop the skills, passions, content, and support that are necessary for success in guided open-ended learning experiences.

The process of transforming a *student* into a *learner* includes three types of activities in the ALM Model: *Explorations*, *Investigations*, and *In-depth Studies*.

Explorations

- student based
- diverse possibilities
- short term
- information gathering
- learning evident (knowledge and comprehension)
- multiple means of reporting
- emphasis on content

Investigations

- student/learner based
- diverse possibilities
- longer term
- passion discovery
- multiple means of reporting
- emphasis on content and process

In-depth Study

- learner based
- in-depth possibilities
- long term
- passion development
- presentation and assessment of learner and product
- emphasis on content, process and product

Erin's Three Levels of Learner Differentiated Curriculum

Erin was a learner at Arvada West High School when she participated in *Explorations*, *Investigations* and *In-depth Studies*. Here are the strategies she developed for herself on all three levels.

Explorations

- Brainstorm and make a mind map of the different topics associated with the moon.
- Find three poets who write about the moon and share their poetry with a friend.
- Collect information about manned flights to the moon.
- Find three websites about the moon and synthesize the information gleaned.

Investigations

- Write poetry or a short story about the man on the moon (verbal/linguistic).
- Chart the phases of the moon for your location and make a moon watching calendar (logical/mathematical).
- Demonstrate a moon dance or walk (bodily/kinesthetic).
- Journal the effects that phases of the moon have on people from your observations (interpersonal).
- Moodle (intrapersonal).
- Develop a model that portrays myths about the moon, using at least five different geometric shapes (spatial).
- Develop a nature walk done by the light of the moon for your locality (naturalist).

In-depth Studies

- Design a collection of original poems based on myths about the moon.
- Create a photographic essay on the thirteen moons of Native American culture.
- Create a planetarium show about the roles and influences of moons in our solar system.
- Complete an essay (with drawings and diagrams) on the different knowledge bases concerning the moon during the past century.

Today's High School and The Autonomous Learner Model

In education today, major emphasis is placed on local and state standards, differentiated curriculum (by teachers), and the use of advanced placement and honors courses for meeting the diversified needs of the gifted and talented. The following concepts and ideas should be kept in mind as they relate to high school education and the ALM:

- The ALM is a major on-going component of the education of the gifted and talented at the high school level.
- The ALM was developed at the high school level by and for the gifted.
- The ALM consists of five major dimension which facilitate a student in becoming a learner.
- The ALM is now used for three to four years in many high schools. If time does not allow such in-depth completion of the model, teachers and learners need to complete the Orientation Dimension and then make decisions together concerning which major dimensions and areas should be attempted in a limited amount of time.
- Advanced placement and honors courses do not meet the diversified cognitive, emotional, social, and physical needs of gifted and talented learners. These courses and programs are only components of a program search and are still teacher prescribed and developed.
- Curriculum developed by learners allows for the highest level of learning.
- A major emphasis of high schools is to develop and facilitate independent, self-directed, life-long learners.
- Program Searches in the high school provide learners diverse strategies in which learning opportunities are continuously discovered and developed in the school and the

Vince Wolfe, A Lifelong Learner

Vince Wolfe was a student at Arvada West High School in the late 1970s. After his identification as a gifted student, it became apparent that he would be successful in a program that encouraged autonomous learning. He thrived on discussions about unusual and uncommon topics, and never hesitated to go into the unknown.

He had many passion areas, but one was exceptional. Whenever possible he would explore and investigate the universe. It was a smooth transition for him from teacher-directed studies to independent learner

As learners progress through the ALM, it is their responsibility to write and update a Transcript Letter (Betts, 1985) to record what they have accomplished. This is a portion of Vince's Transcript Letter following completion of major projects.

Vincent received a background in historical and modern-day astronomical knowledge from Mr. Bob Risch and Jim Vickery of the Jefferson County Planetarium. During this time he also learned how to run the planetarium projectors and audio equipment. After three months, this knowledge was applied in the production of two shows at the Jefferson County Planetarium. The first show, entitled Motions of the Earth, was an explanation of the earth's and other planet's motions in the sky. The motions explained were diurnal, proconsional, retrograde, and the effects of moving to different latitudes on the earth.

When the Jefferson County Planetarium could no longer accommodate his aspirations, he was able to work at the Fiske Planetarium at the University of Colorado in Boulder, Colorado. As a culminating project for his senior year, Vincent participated in the production of a second show at Fiske entitled Montage. It consisted of poetry and a short story written by Vincent, music, slides, visual effects, and laser-effects. For the show, he was allowed to run Fiske Planetarium's \$2,000,000 Neis Mark IV star projector. As a result of two years' work at planetariums, Vincent has learned about and been involved in all aspects of show production and presentation, creative, technical (audio and visual) and business and publicity. (p 66)

Today, Vince is the Project Director of Space Odyssey, a permanent display at the Denver Museum of Nature and Science, Denver, Colorado.

community.

- The ALM is the core of education for the gifted at the high school level.
- The ALM is used as an elective course and is also integrated into enriched and accelerated content courses.
- Mentorships are essential to promote in-depth learning.
- Learners share responsibility with educators for developing their personal educational plans.

Summary of the Autonomous Learner Model

In conclusion, this is what we know about life-long learners:

A life-long learner is one

who loves the moment,
seeks truth, friendship,
knowledge and wisdom.

This person accepts self and others,
and realizes the chance to make this a
better world.

A lifelong learner discovers new paths
for growth, joy,
knowledge and friendship.
the journey begins today...

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