Chapter 6:

Developing a Repertoire of Strategies

“If the only tool one has is a hammer, all problems look like nails.”

--Abraham Maslow

While we cautioned in an earlier chapter that differentiation isn’t just a larger toolbox, there is no question that a broad repertoire of instructional strategies will serve students well in the classroom. In this chapter, we have selected seven strategies that lend themselves to differentiated instruction. Obviously these are not the only strategies that can be used to promote personalized learning in the classroom. However, these seven are research-based and time tested and generic enough so they can be used in virtually any subject area and at almost any grade level. We have included brief descriptions of each strategy and an example of how it might be used in the classroom.

Strategy One: Classification Activity

A classification activity asks students to identify similarities and differences. This can be on a very simple level in the primary grades or it can deal with complex and sophisticated ideas in the high school. Identifying similarities and differences is a
very basic function of human thought and is the origin of all of our conceptual thinking. At the simplest level, concepts are clusters of similarities. Marzano et. al. (2001) describe the research-base and the efficacy of identifying similarities and differences as a learning strategy. There are several ways in which teachers incorporate this critical thinking activity in the classroom:

- **Comparison**: the process of identifying similarities and differences between items or ideas.
- **Classifying**: the process of grouping items or ideas that are similar or have like qualities.
- **Creating metaphors**: the process of finding patterns and perceiving similarities in things that at first appear dissimilar. Metaphoric thinking is one of the highest levels of thinking and represents an excellent informal assessment of conceptual understanding.
- **Creating analogies**: the process of perceiving relationship between pairs or concepts – seeing relationships between relationships.

There are numerous ways that teachers can use a Classification Activity. The Venn diagram provides a simple and accessible graphic organizer for students to work with. A “T” chart can fulfill a similar function.

Below is an example of how Colette Belzil from the International School of Brussels uses a classification activity with her Year 2 IB Standard Level Math class. The purpose for this particular exercise was to get students back into a ‘math mode’ at the beginning of the school year and review curricular topics from Year 1. She started by putting the students into randomly selected small groups and then distributed the following sheet (Figure 1).
Figure 1

**IB Standard Year II**

Cut out the topics and categorize them in groups (no group should have less than 3)

<table>
<thead>
<tr>
<th>b² – 4ac</th>
<th>increasing/decreasing</th>
<th>unit circle</th>
<th>growth and decay</th>
</tr>
</thead>
<tbody>
<tr>
<td>Binomial theorem</td>
<td>Exponents and radicals</td>
<td>Periodic phenomena</td>
<td>System of equations</td>
</tr>
<tr>
<td>Trigonometry (right angle and non-right angle)</td>
<td>Matrices</td>
<td>Calculus</td>
<td>Quadratics</td>
</tr>
<tr>
<td>∑</td>
<td>Expansion</td>
<td>transformations</td>
<td>normal</td>
</tr>
<tr>
<td>Intercepts</td>
<td>[ \begin{pmatrix} 1 &amp; 0 \ 0 &amp; 1 \end{pmatrix} ]</td>
<td>Tangent</td>
<td>gradient</td>
</tr>
<tr>
<td>completing the square</td>
<td>Common ratio / common difference</td>
<td>Speed</td>
<td>maximum / minimum</td>
</tr>
<tr>
<td>Series</td>
<td>vertex</td>
<td>Asymptotes</td>
<td>inflection point</td>
</tr>
<tr>
<td>e</td>
<td>period</td>
<td>Derivative</td>
<td>inverse</td>
</tr>
<tr>
<td>Family of Functions</td>
<td>Rate of change</td>
<td>logarithms</td>
<td>Pascal’s triangle</td>
</tr>
</tbody>
</table>

Her instructions to the students included:
Colette uses this kind of activity as an informal assessment of student understanding. She pays special attention to the concepts which do not get used by the students. She assumes that these are the ones that the students are least familiar with and she focuses future instruction accordingly.

**Strategy Two: 10-2**

The strategy 10-2 comes to us from the work of the American science educator, Mary Budd Rowe. It is very simple to implement and highly efficient in terms of the use of classroom time. Rowe understood that the optimal concentration span for most young adults (and older adults) is between 9 and 12 minutes. She therefore suggested that teachers “chunk” their direct instruction into lecturettes of no more than about ten minutes. There is no question that brilliant lecturers can hold their audiences spell bound for longer periods. However, most of us are not brilliant lecturers.
She further suggested that following each of these lecturettes, students be provided with two to three minutes of processing time. This processing time provides an opportunity for students to identify the key idea(s), formulate questions, forge links to pre-existing knowledge or make personal connections to subject under examination. Mary Budd Rowe’s research demonstrates conclusively that when students are provided with brief periods of processing time understanding and retention increase dramatically.

We use the 10-2 strategy regularly in our workshops. In terms of the processing time, we like to vary the instructions to include the following:

- **Turn to your neighbor**: Identify the key idea(s).
- **Stand-Up Conversation**: Have a stand up conversation with a person not sitting at your table and identify an important question that remains.
- **The 2-Minute Essay**: Write one or two sentences that capture the most important concept.
- **Give one – Get One**: With a partner share a personal connection to the subject that you are exploring.

**Strategy Three: Centers**

Teachers have been using Centers since the 1960’s as they provide for great flexibility and many opportunities for personalized learning. Centers focus on student mastery (or enrichment) of specific understandings or skills. Center tends to be more exploratory and inquiry-based than other assignments.

**Two Kinds of Centers:**
• **Learning Centers**: Areas of the classroom that contains activities and materials that are designed to teach, reinforce or extend a particular skill or concept (Kaplan, Kaplan, Madsen & Gould 1980).

• **Interest Centers**: An area of the classroom that contains activities and materials designed to motivate students’ exploration of topics they have a particular interest in.

Generally Centers should have the following characteristics:

• Focus on important learning objectives;

• Contain activities that are directed linked to student growth towards those outcomes;

• Use resources and activities that address a wide range readiness levels (especially reading), learning styles, and student interests;

• Contain learning tasks and experiences that vary from structured to open-ended, abstract to concrete, and simple to complex;

• Provide clear and explicit instructions for students;

• Incorporate a record-keeping system at the center in order to monitor what students do at the center; and

• Include both a teacher assessment plan and a student self-assessment plan that will lead to adjustments in center learning activities.

**Centers in Action: 20,000 Leagues under the Sea**

Irving Sentosa teaches a combined sixth and seventh grade science class in an international school in East Africa. Irving recognizes that the school’s proximity to the Indian Ocean offers his students a tremendous learning opportunity and he is keen to capitalize on the students’ natural curiosity about the life that exists beneath the
surface of the ocean. Specifically, he wants students to understand scientific concepts such as adaptation, eco-system, interdependence, classification and change.

To start out, the whole class listens to a story by a parent who is a professional diver and they watch a National Geographic video on under sea life. Irving has also arranged for a field trip to a nearby coral reef marine park.

He also uses a science center to ensure that students get individual practice with key concepts and skills. For the next month, all the students will visit the science center and have an opportunity to work like marine biologists in analyzing different aspects of under-sea life.

However, Irving has recognized that in his combined sixth and seventh grade classroom there are a wide variety of readiness levels. Students vary greatly in reading levels and in their complexity of thought. Some of Irving’s students are also learning English as a second language, a couple have been formally identified as having Learning Disabilities and several are academic able and need to be stretched. Their previous knowledge about and interest in marine biology also varies greatly.

The science center contains a number of specimens of crustaceans, several (not-to-scale) models of sea creatures (a leather-back turtle, a sand shark and a moray eel), a variety of photographs of fish, samples of different kinds of coral and sea shells and three large salt-water aquariums with different varieties of coral fish. The center also contains a replica of a parrot fish skeleton and the jaw of a leopard shark. To augment the displays of marine life, Irving has also included his own diving equipment, a wide range books on marine life and a variety of art material and writing tools.

Students are assigned to the center over the course of the month of study. They may also elect to visit the center when it is not in use when they have student-
choice-time or when they have finished other learning tasks before the rest of the class.

In the science center, Irving differentiates tasks and learning experiences by student readiness level. He varies that complexity of the task to match the students starting points. Irving allows students to select whether they will work in pairs, trios or quartets. He attends to their learning profile differences by presenting the material in both auditory and visual ways, and he has included both tactual and kinesthetic activities. He also includes an element of student choice. Students can pursue specific interests in marine biology. Predictably, a small group of boys want to research the Great White Shark.

Irving has crafted a number of different learning experiences for the science center that include:

- Select four inhabitants of a coral reef (must be approved by the teacher) and make a power point presentation to the class on how their survival is dependent on each other.

- Identify three sea creatures that illustrate the scientific concept of adaptation. Make a poster illustrating the different creatures and their connection to adaptation.

- Make a model of a specific fish (choice must be approved by Mr. Sentosa in advance) and illustrate how the body of the fish is specifically designed for its environment.

- Write a job description for a marine biologist that explains what this person does, what kind of training is required and why it might be a very important career in our world today.

**Strategy Four: Entry Points**

The strategy of Entry Points comes to us from Harvard Professor Howard Gardner (1993) who recognized that students bring to the classroom with them a vast array of intelligence preferences, learning styles, talents and strengths. Gardner has
identified seven different types of intelligence (four additional types currently have candidate status). Each of us has all seven types of intelligences but to differing degrees.

Gardner describes Entry Points as a strategy for addressing the varied intelligence preferences that our students bring to the classroom with them. He suggests that students can initiate an exploration of a given subject or topic through five different channels or Entry Points:

**Five Different Entry Points**

1. **Narrative Entry Point:** This involves presenting a narrative or a story about the subject of topic.

2. **Logical-Quantitative Entry Point:** Using a scientific/deductive or qualitative (numerical) approach to the topic or concept.

3. **Foundational Entry Point:** Examining the philosophy or the big ideas that form the foundation to the subject or question.

4. **Aesthetic Entry Point:** Focusing on the sensory (aesthetic) qualities or features of the subject.

5. **Experiential Entry Point:** Connecting the topic or subject to the student’s own personal experience. The student deals with the topic or subject in a real world setting.

**Entry Points in Action: “Wanted Justice: Dead or Alive”**

Mrs. Linda Polonsky is about to begin an exploratory unit with her eighth grade social studies students. Through the study of different periods of history, she wants them to develop a deeper understanding of social justice. She wants them to understand that governments and societies are not always “just” and that through-out
history individual men and women have spoken out and acted, in some cases
 courageously, in the face to unjust laws and governments. She wants her students to
 make connections and identify some of the values and beliefs that underlie the
 concept of social justice. She also wants her student to be able to identify “real life”
 issues in the world today that are socially unjust.

The students in Linda Polonsky’s class begin their unit of study by a whole
 class discussion of what they think of when they hear the phrase “social justice”. This
gives the students a chance to explore prior knowledge and previous understandings.
It also provides Linda with an opportunity to get a sense of the students depth and
breadth of knowledge, their understandings, and perhaps most importantly their
misunderstandings.

Linda then allows each student to select one of the five Entry Point
investigations. The students may choose to work individually or in groups (up to a
maximum of four). Linda has also developed specific assignments for each of the
Entry Points and she distributes explicit rubrics that contain the criteria for success.

Following are brief summaries of Linda Polonsky’s five Entry Point
Investigations:

1. **Narrative Entry Point:** Using the stories provided by the teacher
(Rosa Parks and Aung San Suu Kyi), students analyze the issues and
the specific reactions to social injustice. They develop a glossary of
vocabulary words and design posters and graphic representations
illustrating an historical protest against injustice. The students then
select an individual who confronted an unjust government or system
and write or tell orally the story of their protest.
2. **Logical-Quantitative Entry Point:** Students are asked to imagine a village of 100 people and to use it as a comparison to the world today. They are assigned a series of questions to answer. For example: if the world were a village of a hundred people, how many would live in the United States? How many would own televisions, computers, cars, Ipods? How many would complete primary school, secondary school, university? How many would have access to a fully qualified doctor? How many would live in a democracy? How many go to bed every night hungry? The students would then make a graphic representation (a mural or a poster) illustrating what they had learned about “their village” and social justice.

3. **Foundational Entry Point:** Students would be invited to watch the film “Gandhi” and listen to Martin Luther King Jr.’s speech “I Have a Dream”. They would then relate the film and the speech to the United Nations’ Universal Declaration of Human Rights. They would also prepare a power point presentation entitled “The State of the World Address” exploring how well implemented the Universal Declaration of Human Rights actually is.

4. **Aesthetic Entry Point:** Using the resource material provided by the teacher and others (librarian), the students will examine how art, literature and music have been historical expressions of social conscience. Students will be asked to examine how an artistic expression of protest is different from a political one.

5. **Experiential Entry Point:** Students will be presented with the example of two men who believed that they faced unjust laws
Making the Difference

(Socrates and Thoreau). After reading their stories, the students will analyze the men’s values, beliefs and actions. They will then use newspapers, magazines and the nightly television news to relate these values and beliefs to the present world situation. The students will select an issue that is meaningful to them and write a letter describing their feelings (e.g., a letter to the editor of a local newspaper, a letter to the CEO of Philip Morris, etc).

Linda Polonsky has differentiated content by providing a range of different research materials for each group. She has differentiated process by providing a variety of different ways to think about social justice. The students can use a variety of different production styles (writing, drawing, building, performing) to demonstrate their learning. What stays the same for all students are the core concept of social justice and the exploration of the responsibilities of the individual.

Strategy Five: Tiered Activities

Teachers often ask about how to provide appropriate levels of challenge for a class of students with widely varying degrees of readiness while focusing on the same general learning goals. What strategies can we use when a class contains students with very different reading levels or students that have a difficult time with abstract thought and more advanced students who are clearly sophisticated in their analysis? Tiered Activities offers teachers a useful and efficient strategy to focus on common learning outcomes (understandings and skills) while providing for appropriate learning challenge for different learning needs.
Teachers employ Tiered Activities so that all students can acquire the essential understanding and skills, but at different levels of complexity. A simple example of a Tiered Activity would be when Ochan provided her Grade Eight Humanities students with several choices of essay questions. She would place an asterisk next to one or two of the questions, indicating that they were the more challenging questions. Students who wished to select the more challenging question needed to conference with Ochan about their ideas before starting to write. While student choice was the general rule, Ochan reserved the right to guide some of the more capable, but less confident, students into choosing the challenging essay topics. Student choice also mitigated against some of the negative stigma that is associated with “tracking” or so-called “ability grouping”. What was crucial for Ochan was that even the basic level essay prompt met all the benchmarks for Grade Eight Humanities. Success on the basic level essay prompt was success in Grade Eight Humanities.
Designing a Tiered Activity

1. Clarify the essential learning outcomes/goals
   - Concept/generalization (enduring understanding)
   - Skill or process

2. Identify the learning profiles of your students:
   - Readiness range (reading, thinking, prior knowledge)
   - Interests and special talents
   - Learning styles and intelligence preferences

3. Develop an activity that includes:
   - High level of interest
   - High level of thinking
   - Students using key skills to understand key idea

4. Build a ladder of complexity and chart the activity:
   - High skill or complexity
   - Medium skill or complexity
   - Low skill or complexity

5. “Clone the activity along the ladder in respect to the appropriate challenge for your students:
   - Materials – basic to advanced
   - Form of expression – familiar to unfamiliar
   - Personal experience – from personal experience to experience that is unfamiliar to the student

6. Match the level of the Tiered Activity to the student based on student learning profile and task challenge.

Tiered Activities in Action: “Troubling Deaf Heaven with Bootless Cries”

Mrs. Gina Gathercole has a very diverse group of students in her Grade Nine English class. Wendi and Diah are reading at a college level and Diah’s essays have won prizes in international school competitions. Rhona, on the other hand, is reading on about a 7th grade level and is still struggling with the organization of a five paragraph essay. Steve and Geoff have been formally identified as having learning disabilities and Mrs. Gathercole suspects that Butch may have attention issues. Dunja, Ika, Dawi and Seung Hye are all recent graduates from the school’s ESL program and are still developing fluency and competence in English.

1 Adapted from Tomlinson’s (1999) The Differentiated classroom: Responding to the Needs of All Learners, Association for Supervision and Curriculum Development.
Gina Gathercole is planning a unit on poetry. She wants all of her Grade Nine students to read quality literature and to come to understand that poetry is “manufactured” – that it is crafted by the poet for a specific purpose. She wants her students to develop skill at inferential reading, appreciate figurative language and understand metaphors. She also wants the students to come to appreciate some of the other literary techniques that poets employ. Ultimately, Gina would like her students to come away from the unit being intrigued by poetry and wanting to read more.

She begins the unit by asking the students what they know about poetry and what poems they may have read in the past. She then engages them in a whole class activity in which she reads to them Shelly’s poem “Ozymandis”. Trios of students then study the poem and draw a picture of the scene that the poet is describing. The trios then discuss the meaning of the poem and draft a single sentence that captures the essence of the poem.

Gina then divides them into task forces with the following assignments:

**Task Force One (basic level):** Reads Thomas Hardy’s “During Wind and Rain”. The students identify the structure of the poem and two of the literary devices the poet is using. The students discuss and identify the themes of the poem. Once the students have an idea of the author’s purpose, they embark on the “photo safari” collecting digital images that will serve to illustrate their presentation of the poem to the rest of the class. They are also required to prepare a brief prose commentary on the poem.

**Task Force Two (medium level):** The students read Dylan Thomas’ “Do Not Go Gentle into that Goodnight” and John Donne’s “Death by Not Proud.” They discuss in each case what might be the poem’s meaning and what purposes the poet had in
writing it. They identify three literary devices that are used in the poems. They select appropriate background music for each poem and accompanying visual works of art that will support their presentation of the poems to the rest of the class. They prepare a prose commentary for each poem.

**Task Force Three (advanced level):** The students read Shakespeare’s “When in Disgrace with Fortune and Men’s Eyes” and Marvel’s “To his Coy Mistress”. They identify the structure of the poems and four literary devices that the poets have used. They prepare a power point presentation comparing how the poets have dealt differently with the idea of romantic love. They incorporate visual imagery and music into their presentations and prepare an essay comparing the poems.

**Strategy Six: Learning Contracts**

Learning Contracts combine several aspects of differentiation that have been shown to be effective in promoting student learning. Learning Contracts are in essence a negotiated agreement between the student and the teacher regarding the tasks and activities that the student will complete in order that he or she develop the required understandings and acquire the necessary skills. The design of most Learning Contracts is teacher directed, but the student often works on the activities or tasks with considerable independence. Many teachers include in Learning Contracts a fair degree of student choice regarding what is to be learned (the content), working conditions (individual or group work) and how the learning will be demonstrated (production styles).
Like other learning experiences in the classroom, the assessment of Learning Contracts can take a number of different forms. One fourth grade teacher we know assesses her students Learning Contracts in three ways. First she looks had how well each student worked (goal clarity, on task behavior, perseverance towards the goal, use of feedback, revision). Secondly she checks one or two of the assignments to determine their completion, accuracy and overall quality. Thirdly, each student chooses two assignments (one must be a written assignment) for inclusion in his or her portfolio. Each assignment is self-assessed, assessed by a peer and finally assessed by the teacher against a rubric that was distributed to the class at the start of the unit.

A High Quality Learning Contract:

- Holds the teacher responsible for specifying important learning goals and outcomes and for making sure that the students acquire them;
- Presumes that students can take some responsibility for learning;
- Identifies the skills and processes that students need to practice and acquire;
- Ensures that students will use those skills in a meaningful context;
- Makes explicit the conditions under which the Contract will be executed (student behavior, deadlines, class work involvement in the learning Contract and homework);
- Establishes positive consequences for adhering to agreed working condition and for contract completion (continued independence, student choice, grades). Teachers can also set negative consequences if students do not adhere to agreed working conditions;
- Makes explicit at the start of the contract the criteria for successful completion and quality of work; and
- Includes the signatures of agreement of both student and teacher.
Learning Contracts in Action: “The Night of the Notables”

The Grade Five teaching team looks forward to their unit entitled “The Night of the Notables”. Over the last three years it has evolved into a powerful learning experience for their students, and one that the students and their parents greatly enjoy. The teachers have identified three essential questions for the unit:

1. What are some common characteristics of heroes?
2. How does the passage of time change our perceptions of popular heroes?
3. What qualities make some heroes greater than others?

In terms of skills and processes, the teachers want their students to develop their research skills both in terms of print and electronic media, to hone their expository essay writing skills and to develop a sense of historical empathy.

The unit starts with the students watching a short film on the life of Harriet Tubman. Small groups discuss and identify the qualities that made Tubman a hero. The groups then read a short article on the suffragette leader, Emmeline Pankhurst. The teachers encourage the students to compare the two women. The groups prepare posters showing both similarities and differences.

The teachers then distribute to the students a long list of possible heroes for them to choose from. The students are asked to take the list home and consult with their parents about the selection of a hero to research. The choices range from heroes in sports, politics, science, medicine, exploration, art, music, literature, human rights, etc. Once the students have made their selection, the teachers give them their Learning Contract assignment card. The card states that they must research their “Notable” and answer a series of questions about him or her and the contribution that he or she made. The students must make a brief power point presentation on their
“Notable” and write a five paragraph essay explaining why this person was truly notable (and how his or her personal characteristics matched those of a hero).

The students must then prepare for the “Night of the Notables”. This is an evening event to which the students come dressed as their “Notable”. The students gather in the gymnasium and the parents are held outside. At a specific signal, the doors of the gym are opened and the parents are permitted to enter. The students stand frozen in costume with props representing their “Notable”. The parents move among the “statues” asking questions and trying to guess who each student is.

**Strategy Seven: Curriculum Compacting**

Curriculum Compacting was developed by Sally Reis and Joseph Renzulli² as a strategy for use with above average students who may have already mastered much of the content on offer, or with those who learn very quickly. The metaphor of the compactor helps us to imagine that the learning program will be compressed or condensed for these children, so that needless repetition can be eliminated and instruction can be streamlined to match the motivation of the children involved. Many gifted students come to school already knowing the material presented at their grade level, and consequently learn less than their peers.

Curriculum Compacting assists teachers in making appropriate program decisions for gifted children as well as to analyze curriculum content so that teachers are clear about what students need to learn. In addition, Curriculum Compacting provides time for learning enrichment or acceleration.

² For further information, please see: http://www.sp.uconn.edu/~nrcgt/sem/semart08.html
How to Use the Compacting Process

Define Goals and Outcomes: The first step of the compacting process is to define the goals and outcomes of a particular unit or segment of instruction. Although scope and sequence charts can offer much of this information, we recommend that teachers also look at their Essential Questions and Enduring Understandings that they want students to learn. Ask questions like: What’s important for students to know, understand and do? What can be eliminated? What is new material (declarative and procedural) and what has been previously taught? This kind of analysis not only helps teachers to focus on what is important for students to know, but also illuminates how instruction might be streamlined.

Identify Candidates for Compacting: The second phase of Curriculum Compacting is to identify students who already have an advanced mastery of the identified goals and objectives of the proposed learning unit, or who may learn the content very quickly. This step underscores one of the keys of differentiation; that is, Knowing your student as a learner. It is essential that teacher observations and comments form part of the assessment procedure. Some questions that teachers might ask include: Does the student complete work quickly and at a high standard? Do other students approach him/her for assistance? Is s/he bored during class instruction? Does the student score very well in specific areas, or wish to explore more advanced or other areas on his/her own? What is his/her reading/vocabulary level?

When compacting for specific skills (e.g. as in a math class), teachers may wish to administer pre-tests for each unit to determine which students have already mastered the skill and might benefit from compacting. If students have not mastered the skill,
teachers need to be clear that students show the potential for learning it faster than would be expected for students of the same age.

When compacting for a content area, candidates for compacting would be those who are more likely to gain from opportunities for self-directed learning. Pre-assessing students is more complex with this type of compacting. Teachers may wish to set performance-based pretests (e.g. an expository or persuasive essay that can be analyzed for content), use observations of students (e.g. how they take notes, what questions they ask, what connections they are making), and review student portfolios or work samples that might indicate mastery of the learning objectives.

**Provide Acceleration and Enrichment Options:** Efforts should be made to identify possible enrichment options or replacement activities for learning the ‘yet-to-be-mastered’ objectives. Teachers and students can cooperate in the decision making for what would be an appropriately challenging learning experience. Some guidelines for such experiences include: the assignment must be of high quality and appropriate to the student’s level; it must offer the potential of engaging students; and the students must have sufficient time to learn.

The formats for this type of learning are varied: students can learn on their own, in pairs or small groups. They can also be organized around seminars or work with a mentor. Students can pursue project work or conduct independent research on a high-interest topic. An important point is for students to be able to pursue self-directedness in their learning, and make appropriate decisions.
Curriculum Compacting can offer teachers rich opportunities for differentiating by student interest and learning style, and provide options for students to demonstrate their learning through a preferred production style. Teachers do need to keep documentation of the learning objectives and the basis on which compacting candidates were selected. Records should also be kept of student work and demonstrations of mastery.