Advanced Learner

Iowa Department of Education

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Multi-Tiered System of Support Guide

TEAMS LEADING THE WORK

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The Advanced Learner Multi-Tiered System of Support Guide was created to assist classroom teachers, ensuring all students are appropriately challenged. It can be used in conjunction with the C4K Universal Tier Tools or separately. This was written content neutral and can be used across disciplines. Our hope is the compilation of research, strategies, tools, and resources will be of use to educators in Iowa's schools to best teach our advanced learners.

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We would like to thank Michael Hall and the Montana Office of Public Instruction for the inspiration and for the permission to use a majority of the *Planning Guide and Strategies for Serving Montana's High Ability/High Potential Students*.

http://opi.mt.gov/pdf/Gifted/GTPlanningGuideStrategies.pdf

RATIONALE

In this era of ensuring that all students are supported in meeting the Iowa Core standards, schools must also support students who possess demonstrated achievement or potential ability beyond their grade-level peers.

ADVANCED LEARNERS

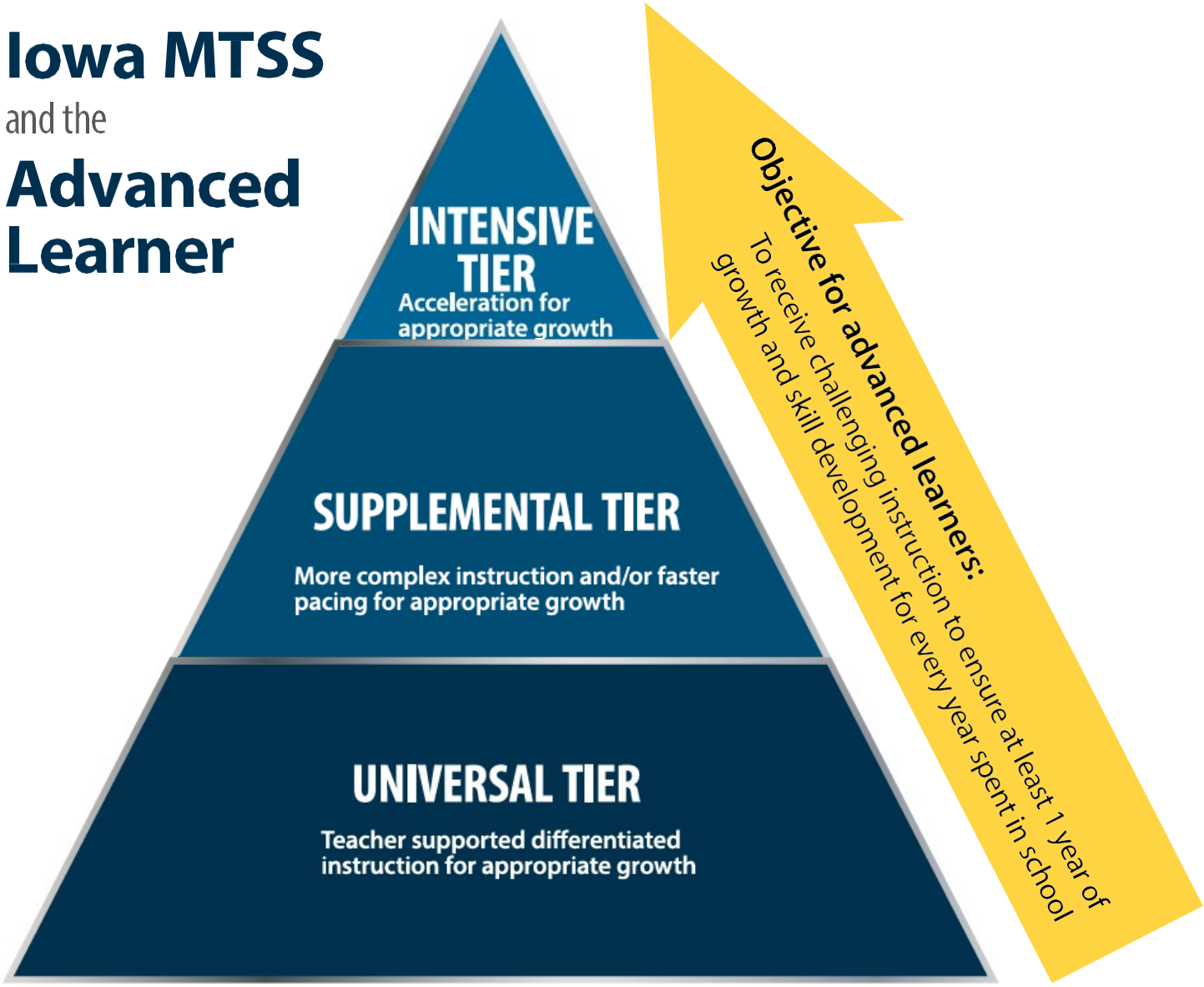
The population for whom this guidance document is intended (advanced learners) are those students who are identified for gifted and talented services as well as those high ability/high potential students who need different supports but who may not meet the criteria for a district's gifted and talented identification. Advanced learners do not all fit neatly into the same category; they, like every other student, deserve to have their learning needs addressed. Services to advanced learners must be consistent, planned, and embedded in the daily school experience. Advanced learners most often need a different approach in the regular classroom; this is the foundation of the program for this student population. This different approach lies in strategies specific to what Dr. Karen Rogers identifies as instructional management (how students are grouped for instruction), instructional delivery (how they need to be taught), and curricular differentiation (the ways in which content, process, and product are modified to meet student needs). Fundamental Universal Tier strategies employed in these three areas may be found in the tables on pages 10-13 of this guide.

SERVICES

Many of the services that advanced learners need can occur in a general education setting with the students' classroom teacher, but the services must occur in a different way. This MTSS guide provides a wide variety of strategies or approaches for how this different way might look at the classroom, building, and system levels in all three tiers of support for advanced learners. But the strategies must be carefully planned and matched to the needs of each student if he/she is to be challenged, grow, and learn. Schools must provide ways for teachers, parents, specialists, counselors, and administrators to collaborate, share ideas, and make comprehensive programming and services work for the advanced learners in their district. Keep in mind, the MTSS strategies presented do not replace, but should support, the school district's requirement to identify gifted students and provide a program of services specific to their cognitive and affective needs as mandated in 1) Iowa Code 257.44 Gifted and talented children defined, 2) 281—Chapter 59 Gifted and Talented Programs and 3) 256.11 Chapter 12 General Accreditation Standards - 12.5 (12).

ADVANCED LEARNERS IN A MULTI-TIERED SYSTEM OF SUPPORT (MTSS)

IOWA MTSS AND ADVANCED LEARNERS



Adapted from ***The New RtI: Response to Intelligence***, by Penny Choice, M.Ed., & Sally Walker, Ph.D., 2011. Reproduced by permission of Pieces of Learning, Inc., https://piecesoflearning.com/

The MTSS triangle-shaped graphic illustrates how multiple tiers of support meet the needs of most advanced learners at the classroom level of instruction. The percentages of advanced learners reflect the original MTSS framework. Many (up to 80%) advanced learners can have their needs met within the regular classroom setting (Universal Tier), but only when there is appropriate differentiation. Some (10-15%) advanced learners in a classroom will need some type of augmented services (Supplemental Tier), in which they receive more complex instruction and faster pacing in a group or as an individual. Even with differentiation and additional services, a

few (5-10%) advanced learners will require acceleration designed for the individual student. (Iowa Code 257.44 Gifted and talented children defined).

UNIVERSAL TIER TOOLS AND BEYOND

The Iowa multi-tiered system of support is a school-wide, multi-level instructional system for ensuring student success including screening, progress monitoring, and data-based decision making for instruction and movement within the multilevel system. The system can work equally well for addressing the needs of students who are advanced in their learning as well as students who experience difficulties in learning. The process is the same; the specific interventions are different.

What happens when a student is viewed through the lens of potential rather than deficit? How schools act and respond when students struggle and when students succeed builds a culture of educators responding to the needs of children. Schools that understand their role in addressing the academic needs of each student depend primarily on the core belief that all students can and deserve the opportunity to learn at the appropriate level and pace.

The Iowa MTSS model assumes that each student receives high-quality, research-based, differentiated instruction from a general educator in a general education (classroom) setting. The research-based instructional practices employed need to be carefully chosen from the research base for the specific population under consideration. For example, a class-wide intervention is appropriate for those students who have not yet mastered the identified standards. However, advanced learners should be receiving complex and appropriately paced instruction to meet their needs as well.

COLLABORATIVE INQUIRY QUESTIONS

D. Do we have an established and ongoing collaborative inquiry process for implementation of practices within MTSS?

CIQ	CIQ Expanded for Advanced/Gifted Learners
1. Is the Universal Tier sufficient?	**1. Is the Universal Tier sufficient for advanced/gifted learners?** a. Does the Universal Tier present sufficient challenge, depth, complexity, and abstraction and at an appropriate pace to ensure the advanced/gifted learner engages fully and learns something new each day?
2. If the Universal Tier is not sufficient, what are the needs that must be addressed?	**2. If the Universal Tier is not sufficient for advanced/gifted learners, what are the needs that must be addressed?** a. Do classroom grouping arrangements support the learning needs of advanced and gifted learners? (cluster grouping, homogeneous grouping, cross-grade grouping) b. Are evidence-based practices for advanced and gifted learners provided as part of a differentiated Universal Tier? i. Is more advanced content and/or complex text substituted where appropriate? ii. Are advanced and gifted learners given fewer repetitions than average students? iii. Are pre-assessments used to identify content and skills students already possess? Are these data used to determine curricular placement?
3. How will Universal Tier needs be addressed?	**3. How will Universal Tier needs for advanced/gifted learners be addressed?** a. What assumptions have we uncovered in the building/district regarding advanced/gifted learners? How will these assumptions be addressed? b. Do classroom teachers receive the professional learning necessary to differentiate for the needs of advanced and gifted learners?
4. How will the implementation of the Universal Tier actions be monitored over time?	**4. How will the implementation of the Universal Tier actions for advanced and gifted learners be monitored over time?** a. What assessments will inform future decisions about advanced student placement and pacing? How frequently will progress be monitored? b. If the student is placed in Universal Tier above grade level, does he/she demonstrate success and learning in that placement?
5. Have Universal Tier actions been effective?	**5. Have Universal Tier actions for advanced and gifted learners been effective?** a. Do Universal Tier actions match student needs? b. Does the student continue to make growth in the Universal Tier he/she receives? c. Are there effective ways to measure growth for advanced and gifted learners; e.g., testing above level, attainment of Personalized Education Plan (PEP) goals? d. What evidence exists that these actions result in positive performance trends for advanced and gifted learners?
6. Which students need support in addition to the Universal Tier?	**6. Which advanced/gifted students need supports in addition to/in place of the Universal Tier?** a. What data will show for which students the Universal Tier needs to be more challenging or of greater depth, complexity, and/or abstraction? b. How is the Universal Tier enriched and/or accelerated for advanced/gifted students? c. What diagnostic assessments are in place to show that a student performs significantly beyond Universal Tier provided at chronological grade level?
7. Which of the Targeted and/or Intensive Tier	**7. Which of the Targeted and/or Intensive Tier supports are needed to meet the needs of identified advanced/gifted students?** a. Have Targeted and Intensive Tier options for advanced/gifted learners been identified?

supports are needed to meet the needs of identified students?	b. Have classroom teachers received professional learning about these options and their implementation? c. What data show the need for Targeted and/or Intensive supports for advanced/gifted learners? d. How do classroom teachers and gifted education specialists collaborate to make these decisions?
8. How will Targeted and/or Intensive Tier supports be implemented?	**8. How will the Targeted and/or Intensive tier supports be implemented?** a. What classroom grouping arrangements will facilitate implementation? (e.g., cluster grouping, cross-grade groupings) b. Is serving the needs of advanced/gifted learners a building/district priority? c. Is it clear the part each stakeholder plays in the implementation of Targeted and Intensive Tiers for advanced/gifted learners?
9. How will the implementation of Targeted and Intensive Tier supports be monitored over time?	**9. How will the implementation of the Targeted and Intensive Tier supports be monitored over time?** a. What objective and subjective data reflect success of advanced/gifted learners in Targeted and/or Intensive Tiers? b. What objective and subjective data reflect fidelity of teacher implementation of Targeted and Intensive supports?
10. Have targeted and intensive tier supports been effective?	**10. Have targeted and intensive supports been effective for advanced/gifted students?** a. Does the student continue to require and receive increasingly intensive resources to continue the learning trajectory? b. Does the advanced/gifted student's growth continue at a pace that creates a greater discrepancy between him/her and chronological age peers relative to grade level standards and performance expectations?

C4K Collaborative Inquiry Questions for Advanced Learners, by Mary Schmidt, ITAG Conference 2015.

UNIVERSAL TIER: DIFFERENTIATED INSTRUCTION

THE LEARNER

Advanced Learners within Subgroups in the Universal Tier

In general the advanced learner has the capacity to learn material more quickly than age mates and may come to the learning environment with prior knowledge and experience atypical for their grade placement; i.e., they already know some, much, or nearly all of what is to be taught. These children may have reasoning abilities and a capacity for complexity, depth, breadth, and accelerated pace in learning that are beyond the curriculum and instruction offered at their grade level. Sometimes these strengths are easily identified and addressed; sometimes they are obscured by factors the system is not trained to consider.

These children come from culturally and linguistically diverse backgrounds (CLD), low SES, and struggling/IEP. Another consideration is the exceptionally gifted child who is significantly beyond his/her chronological grade placement. This issue is made more complex by the fact that these subgroups may overlap in a variety of ways. For example, the CLD student may also be low SES; the struggling/IEP student may be low SES or CLD, and the IEP student may be exceptionally advanced. It is incumbent upon the school working within an MTSS Framework to raise awareness of the characteristics and needs of advanced/gifted learners within these subgroups as they first provide instruction in the Universal Tier and in the identification of Supplemental and Intensive Tier supports necessary for advanced/gifted learners' equitable access to appropriate curriculum and instruction.

Specific characteristics of these learners are addressed in the following places in this document:

Low Income Students (low SES) – p. 26
Culturally and Linguistically Diverse (CLD) – p. 32
Struggling/IEP (Twice Exceptional) – p. 28
Exceptionally Gifted – p. 23

INSTRUCTIONAL CONSIDERATIONS

In the Iowa MTSS model, teachers use assessment data to monitor and maintain the ongoing cycle of learning. The results of screening will allow teachers to understand which students are at risk and which are secure in the foundational skills required for success. A screener is not designed to identify areas in which a student is advanced or to inform instruction for advanced learners. It will indicate where further data needs to be collected to diagnose areas of significant strength for advanced learners, what they already know, and what they're ready to learn next. With the results of diagnostic assessments, instruction can be planned accordingly. Examples of diagnostic assessments include but are not limited to teacher

Guidelines for an Atmosphere Conducive to Differentiation

Promote success for all students as they learn important information in different ways.

Encourage respect, responsibility, ownership and pride.

Allow students to polish and refine their craft.

Recognize where each student begins, and enable each to experience as much progress as possible.

Invite challenge and complexity in both thought and production.

Integrate high-order thinking, including the encouragement of abstract thinking and symbolism.

Involve students in planning and organizing learning.

Extend students from consumers to producers.

~Bertie Kingore

Differentiation: Simplified, Realistic, and Effective; How to Challenge Advanced Potentials in Mixed-Ability Classrooms. Professional Associates Publishing, 2004. p. 9-10.

observation data and student performance data, above grade level assessments, end-of-course assessments, criterion-referenced and outcome-based tests. These help to identify the skills that students have mastered indicating the need for appropriately challenging content in future instruction. With the results of diagnostic assessments, programming can be planned accordingly. Students should receive differentiated instruction that keeps them on a path of continuous learning to ensure one year's growth for every year spent in school.

The most important Universal Tier strategy for advanced learners is differentiated instruction, which usually occurs in flexible small groups within the regular classroom or regular instructional time. The key principles of differentiated instruction include

- student-centered instructional practices and materials that are standards-based and grounded in research,
- instruction that has clear objectives with focused activities to reach the objectives,
- assessment results that are used to shape future instructional decisions,
- multiple avenues for students to show mastery of essential content and skills and to demonstrate their learning, and varied pacing, depth, and complexity.

Differentiated instruction should be provided to accelerate/deepen learning for advanced learners to maximize student achievement for all students as part of universal instruction. The classroom teacher should provide flexible instructional grouping of students based on their ongoing identified needs based on assessment data. Instructional practice for advanced learners must include or revolve around higher order thinking and questioning, more open-ended assignments, choice, and proof and reasoning (Rogers, 2002).

UNIVERSAL TIER: SAMPLE STRATEGIES FOR CURRICULAR DIFFERENTIATION

The ways in which content, process, and product are modified to meet student needs.

Strategy	Description
Abstraction	Content that goes beyond surface detail and facts to underlying concepts, generalizations, and symbolism.
Choice	Provide opportunities for choices and flexibility. Many advanced learners love the opportunity for choice and given an opportunity, will construct their own differentiated choices. Possibilities include choice boards, tic-tac-toe, and layered assignments.
Compacting	This strategy should be used at *all* levels to prevent repetition and re-teaching of content students have already mastered. To compact, the teacher must pretest students in the content to be presented. Students mastering, or nearly mastering, the content then move on to an advanced level of difficulty.
Conceptual discussions	High level discussions of themes, concepts, generalizations, issues, and problems, rather than a review of facts, terms, and details.
Extensions	Offer relevant extension options for learners who need additional challenges. The extension should be different from rather than in addition to the whole-class assignment.
Flexible assessments	Offer different assessment options that allow students to demonstrate their mastery of new concepts, content, and skills.
Flexible project time	Students negotiate for more or less time to complete a learning experience and its matching product or assessment. Consider the use of a learning contract.
Grouping	Vary opportunities to work in whole groups, small groups, with a partner, or in an independent setting based on readiness and/or interest.
Higher-order thinking skills	Design questioning in discussion or provide activities based on processing that require students to analyze, create (synthesize), evaluate, or engage in other critical thinking skills that will extend thinking beyond the demand of the grade-level standard. Bloom's Taxonomy Levels: remember, understand, apply, analyze, evaluate, and create. DOK Levels: recall/reproduction, skill/concept, strategic thinking, and extended thinking.
Independent study	Students research a teacher-chosen or self-chosen topic/question/problem, developing either traditional or nontraditional products to demonstrate learning. The independent study should be different from rather than in addition to the whole-class assignment, project, or unit.
Jigsaw/cooperative learning	Just as in a jigsaw puzzle, each piece–each student's part–is essential for the full completion and full understanding of the final product.
Mini-lessons	Mini-lessons provide levels of scaffolding, support, and challenge as needed for students of like ability/need.
Most difficult first	Students can demonstrate a mastery of a concept by completing the five most difficult problems with 85 percent accuracy. Students who demonstrate mastery do not need additional practice.
Open-ended assignments	Provide students with questions and challenges that do not have single right answers or outcomes. The tasks may have timelines and a sequence of activities to be accomplished, but outcomes will vary for each student.
Pre-assessment	Use an array of pre-assessment options to check for student mastery prior to instruction. By regularly pre-assessing students, teachers can flexibly group students by ability and readiness levels. Pre-assessment is also essential for curriculum compacting and other methods of advancing student learning.

Strategy	Description
Problem-based learning	A student-centered instructional strategy in which students collaboratively solve problems and reflect on their experiences. Learning is driven by challenging, open-ended problems. Students work in small collaborative groups. Teachers take on the role as "facilitators" of learning.
Subject integration/ "theme-based" units	Combining standards or concepts within or across two or more disciplines and their content through a conceptual theme, such as "origins," "change," or "friendship".
Textbook resources	Many textbooks have a component for high ability/high potential learners or computer/online programs or websites to meet learners' needs. It would be important to note that many of these are insufficiently challenging for many advanced learners, so making available above-level textbook selections may be necessary.
Tiered assignments	Varied levels of tasks to ensure that students explore ideas and use skills at a level that builds on what they already know and encourages growth. All students explore the same essential ideas but work at different levels of depth and complexity.
Varied levels of complexity	Books and instructional materials at different levels of complexity allow students to study the same concepts but at levels of depth and complexity to fit their learning needs. The minimum level of complexity should be that which is demanded by the standard or learning target. Variations on the approach to the curriculum may include studying rules, trends, multiple perspectives, patterns, power, ethics, details, cross-disciplinary themes/concepts, and changes over time. Additionally, bundling standards within or across disciplines is an appropriate way to increase the complexity of the learning experience.
Varied pacing	Plan to accommodate varied pacing, allowing students to move through content at a pace appropriate for their learning needs.

Adapted from The Differentiated Classroom: Responding to the Needs of All Learners, by Carol Ann Tomlinson. Published by the Association for Supervision and Curriculum Development, www.ascd.org.

UNIVERSAL TIER: SAMPLE INSTRUCTIONAL DELIVERY METHODS

How students need to be taught.

Strategy	Description
Accelerated pace	Students progress faster as the teacher speeds up rate of presentation of information in order to match the significantly faster learning rate of high ability/high potential learners.
Competitions	Students participate in contests outside of school using the knowledge and skills learned both in and outside of the classroom.
Flexible project deadlines	Students negotiate for more or less time to complete a learning experience and its associated product or performance.
Flexible tasks	Students and teachers co-construct the requirements and parameters of a required product or performance to allow for student voice and choice, while maintaining the focus of the standard or learning target that will result in acquired knowledge, skills, dispositions, and conceptual understandings. Consider the use of learning contracts.
Higher-order responses	Students are required to use higher order thinking (application, analysis, synthesis, evaluation, strategic or extended thinking) in their learning responses.
Independent Study/ Learning contracts	Students learn about and/or research teacher-chosen or self-chosen topics, developing either a traditional or nontraditional products to demonstrate the learning acquired. Students negotiate individually with teachers about what and how much will be learned and when product will be due.
Inquiry	Students respond to teacher- or student-led questioning, problems, or scenarios in order to learn new concepts or draw conclusions and make generalizations during the learning process.
One-on-one tutoring	Students are assigned a special instructor or other content expert to develop their expertise in a specific subject. Most effective when used with high ability/high potential students to enhance learning, not to remediate what is missing.
Open-endedness, creative thinking	Students are encouraged to brainstorm or think divergently in order to produce more than one idea, answer, or solution.
Problem-based learning	Students' learning is driven by challenging, open-ended problems, working in collaborative groups within or beyond the classroom to construct and reflect on their own learning. Teachers and/or mentors become collaborators and facilitators of learning.
Question typology	Students engage with curriculum utilizing varied question types including informational, interpretive, explanatory, procedural, relational, verificational, heuristic, evaluational; questions may be content-directed, student-directed, rhetorical, or ambiguous. (For more detailed explanation, see http://www2.phy.ilstu.edu/pte/311content/questioning/typology.html.)

Adapted from ***Re-Forming Gifted Education: How Parents and Teachers Can Match the Program to the Child***, by Karen B. Rogers, Ph.D. Reproduced by permission of Great Potential Press, www.giftedbooks.com.

UNIVERSAL INSTRUCTION: SAMPLE INSTRUCTIONAL MANAGEMENT STRATEGIES

How students are grouped for instruction.

Strategy	Description
Cluster grouping	Identify and place four to eight high ability students in the same grade level and place them in one class with a teacher who is trained to work with them and who will devote proportional class time to differentiating for them.
Cooperative learning groups	Intentionally group students for activities for the purpose of developing academic and peer interaction skills. May be like or mixed-ability groups, depending on the goal(s) of the learning. Organizing groups of learners in three- to four-member teams of like ability and adjusting the group task (content, process, and/or product) accordingly has an effect size of .28.
Cross-graded classes, cross- age grouping	Grouping children by their achievement level or readiness in a subject area rather than by grade or age level. Also known as multi-age classrooms.
Flexible skills grouping	Students are matched to skills by virtue of readiness, not with the assumption that all need the same spelling tasks, computation drill, writing assignment, etc. Movement among groups is common and based on readiness on a given skill and growth in that skill. Pre-assessment is a cornerstone of flexible grouping.
Full-time ability grouping	Children of high ability or with high achievement levels are put into a separate group for differentiating their instruction. Ability grouping can be full- or part-time, permanent or flexible sorting.
Regrouping by achievement for subject instruction	A form of grouping usually, but not always, sorted once a year, that delivers appropriately differentiated curriculum to students at a specific ability or achievement level.
Within-class performance grouping	Sorting of students, topic by topic or subject by subject, within one classroom for the provision of differentiated learning for each group.

Adapted from ***Re-Forming Gifted Education: How Parents and Teachers Can Match the Program to the Child***, by Karen B. Rogers, Ph.D. Reproduced by permission of Great Potential Press, www.giftedbooks.com.

INSTRUCTIONAL CONSIDERATIONS

The supplemental tier instruction is systematic, explicit, and aligned with ongoing universal tier instruction. It parallels what is going on in the general classroom with adjustments to depth, complexity, abstraction and pace. Instruction is based on individual needs. However, the supplemental tier instructional interventions may be delivered in small groups of students with similar strengths, interests, or needs as determined by assessments and observations.

The key is observing and assessing each advanced learner's progress based on his/her potential. Once a teacher understands what progress is occurring during the high ability/high potential student's time in the classroom, recommendations can develop for additional interventions to help the student achieve to his/her potential.

A commonly employed supplemental tier intervention is a "pull-out" or "pull-together" program that happens once a week with a teacher familiar with the needs of the advanced students. Frequently, in providing gifted services this is perceived as the entirety of a school's gifted program. In reality, it is *one* element of a comprehensive program to meet advanced learners' needs outside of the gifted program. When advanced learners come together in small groups to expand core curriculum learning, they have opportunities to advance the level of content, critical and creative thinking, and guided independent study in areas of their own interests and strengths. A supplemental intervention can be a pull-together program utilizing classroom teachers, but it does not have to be. The chart on the next two pages provides suggestions to align a district's supplemental tier program with general classroom instruction to ensure advanced learners progress at an appropriate rate.

Needs of High Ability Students

Appropriate pace & level of complexity

Opportunity to demonstrate mastery

Time with others of like ability

High levels of thinking, both critical & creative

Acceptance, respect, Encouragement

Feelings of success – with hard work.

SUPPLEMENTAL TIER: SAMPLE STRATEGIES

Strategy	Description	Related Research
Ability grouping	Children of high-ability or with high-achievement levels are put into a separate group for differentiating instruction (full or part-time or flexible sorting) Ability grouping was suggested as a way for schools to promote high levels of achievement and shrink excellence gaps among their populations" (Plucker, Burroughs, Song, 2010). When used properly, ability grouping allows for flexibility, letting students move up or down during their educational careers. Flexible ability grouping allows schools to match a student's readiness with instruction, "delivering the right content to the right student at the right pace and at the right time." Additionally, grouping allows students to learn alongside others who have learn at similar rates, possess similar levels of knowledge, and share similar goals, resulting in a peer group where students can challenge one another (Olszewski-Kubilius, 2013).	Grouping often is the "most effective and efficient means for schools to provide more challenging coursework, giving these children access to advanced content and providing them with a peer group" (Renzulli and Reis, 2014). In studies of performance of gifted students in ability-grouped classes in which the curriculum was accelerated, the effect size was found to be 10 months, 22 months of progress in 12 months of time (Kulik, 1992). Flexible grouping by math ability, together with differentiated curriculum, improved the academic achievement of students with middle and high levels of prior knowledge when compared with the comparison subgroups (Tieso , 2002).
Abstraction	Going beyond surface information; use of symbolism, underlying meaning of content	Teaching gifted students well means having the expectation that content, process, and products will be abstract, complex, and multi-faceted (Tomlinson, 1997)
Cluster grouping	Cluster grouping is the practice of placing the top group of students from a grade into the same classroom. This assures the teacher of having a "group," rather than just one student who is above and beyond his/her peers. The teacher of this group should enjoy working with high performing students and have a background in differentiated instruction for advanced learners. With this strategy, advanced learners are working on advanced curriculum and assignments as a group within a regular classroom. It avoids the situation where a single child is always working by him/herself, thus allowing interaction and discussion within their own group. Gentry's Total School Cluster Grouping Model "uses the achievement performance levels of all students in the school to create classes of students characterized by a reduced range of student achievement levels, but including students that achieve at above average levels in every classroom."	Research suggests that there are several benefits of cluster grouping. Gifted students regularly interact with their intellectual peers and age peers (Delcourt and Evans, 1994). Cluster grouping can provide full-time services for gifted students without additional cost. Curricular differentiation is more likely to occur when a group of high-achieving students is placed with a teacher who has expertise, training, and a desire to differentiate than when these students are distributed among many teachers (Bryant, 1987; Kennedy 1995; Kulik, 1992;Pierce et. Al, 2011; Rogers, 1991). Research shows achievement gains among gifted students in cluster groups and among students not identified as gifted when the program is run with fidelity and with a teacher who has professional development in differentiation and giftedness. The achievement gains were larger for math cluster groups than for reading cluster groups. Over time, use of cluster groups resulted in increases of greater numbers of students as high achieving, including students who are traditionally underrepresented (Gentry, 2014).
Competitions or advanced clubs	Examples: • Math Olympiad • Math Counts • Future Problem Solving • Destination Imagination • Junior Great Books • JASON Project	Pre- and post-test data of highly talented mathematical students in grades 3-6 who participated in a special program offered by Johns Hopkins University gained an average of 46 percentage points (Mills, Ablard and Gustin, 1994). In a review of the research on academic competitions, report that many educators use these competitions are extracurricular options for high ability and gifted students. The few studies do show that students show increases in creativity when participating in Odyssey of the Mind. Students participating in Future Problem Solving responded positively about enhancements in creative thinking, teamwork, research skills, and their own control over the future (Omdal and Richards, 2014).

		In a study looking at gifted students who participated in talent development through competitions, the researchers reported a long-term impact on these students' postsecondary achievements, with 52% of the 345 students who participated having earned doctoral degrees (Campbell and Walberg, 2011).
Complexity	Providing more difficult and intricately detailed content. Kaplan's Depth and Complexity Model is a curriculum model that provides flexible prompts to help all learners go deeper and more complex with content.	Complexity is one of the hallmarks of a differentiated curriculum. Tomlinson argues, based on decades of research, that a well-executed differentiated curriculum that uses appropriate strategies to meet an individual student's need results in positive academic outcomes.
Concept-based programs	Programs such as Mentoring Mathematical Minds (M3) and Accelerated Math focus on mathematical reasoning, creativity, and conceptual understanding	Students using such programs as M3 and Accelerated Math have shown statistically significant gains in mathematical understanding and have outperformed students in comparison groups.
Cooperative grouping with like-ability learners	Organizing groups of learners in three to four member teams of like ability and adjusting the group task accordingly	Grouping academically talented students together for instruction has been found to produce positive achievement outcomes when the content and instruction provided are appropriately differentiated to be challenging. (Gentry, 1999; Kulik and Kulik, 1992; Rogers, 1991)
Cross-graded classes	This is a variation of regrouping for specific instruction. In this situation the entire school must teach the same subjects at the same time so that students go to classes that are taught at their level regardless of grade level placement. At a particular time each day students would travel to the appropriate grade (or room) for their instruction, which is delivered based on readiness. For gifted students, again, the focus would be on pace, depth, breadth, and complexity.	Several studies show that students who were placed in grade levels that matched their mathematical readiness had effect gains (Kulik, 1992; Mills et. al., 1994).
Curriculum compacting	Compacting is the practice of pretesting student knowledge of material before it is taught. This can be done by using end of level tests, a written narrative of what the students already know, etc. If the student has mastered or nearly mastered the material, he/she should be delivered a curriculum that is new and that offers a challenge. With skill- based subjects, such as math and early reading, the end of unit tests work well. With more content-based areas, such as literature, social studies, and some science, students could have the option to take the book, study the chapter, take the test, then go on to replacement, or extension, material.	Effect size is .83. A study of 436 second to sixth grade high ability students revealed that even though 40-50 percent of the curriculum was eliminated, performances on standardized tests were equivalent to that of students who received regular curriculum instruction (Reis, et. al., 1993).
Diagnostic testing/ prescriptive instruction model	Above level diagnostic testing is used to determine the strengths and weaknesses of advanced learners and determine areas of study. Especially useful for mathematically advanced students.	"Most of the research with the DT->PI Model has been conducted with students in seventh grade taking the SAT and subsequently completing high school mathematics courses. Their stories are highly successful. For example, students scoring 600 or above on SAT-Mathematics completed two high school mathematics courses in just 50 hours of in-class instructional time (Bartkovich & Mazynski, 1981). Many students have mastered an entire year's worth of material with just 75 hours of instruction (Olszewski-Kubilius, Kulieke, Willis, & Krasney, 1989). Students participating in fast-paced courses do not suffer ill effects in their long-term retention of the subject matter (Benbow, 1992b; Benbow, Perkins, and Stanley, 1983) and perform very well in the next course in the sequence offered in their schools" (Assouline and Lupkowski-Shoplik, 2003)

Early instruction in presentation, research, study, and organizational skills	Direct instruction in research, which will allow students to pursue areas of strength and interest.	A well-executed differentiated curriculum that uses appropriate strategies to meet an individual student's need results in positive academic outcomes (Tomlinson, 1997).
Extra-curricular learning	Accelerated programs outside of regular school curriculum may be offered after school, on Saturday, or during the summer. The best case scenario for extra-curricular learning is that a student receives credit for learning so s/he does not have to repeat this learning again when her/his same-age peers are learning it in the regular school curriculum.	Pre- and post-test data of highly mathematically talented students in grades three through six who participated in a program offered by Johns Hopkins University gained an average of 46 percentage points (Mills, et. al., 1994). "Out-of-school options for programming may include specialized courses or programs like the Catalyst Program, a special science course for adolescents with deep interests chemistry. The students in the course felt they improved their ability to present their scientific ideas more effectively and developed a better understanding of the creative process in science research. When surveyed, 18 of the 23 students in the course said it impacted their decision to study the sciences, particularly science research. Additionally 10 of the 23 students suggested the program increased their interest in pursuing research opportunities in general in college. The students also felt they benefited from the intense immersion in science research and the chance to receive mentorships and work with science professionals (Reis et. al, 1998). Other researchers have also found that students out-of-school enrichment programs such as Saturday programs have reported high levels of interest, challenge, choice, and enjoyment in these course offerings" (Lee and Olszewski-Kubilius, 2006). "Another out-of-school option may include enrolling gifted students in specialized distance learning courses (often provided through talent search programs). In a study of the distance learning programs offered through Johns Hopkins University's Center for Talented Youth, outcomes of the program for gifted students ages 5-17 were examined by looking at both student and parent evaluations and final grades for the courses. Overall, the students and their parents found the course an effective learning experience, suggesting that such programs can be an effective approach for enriching or accelerating in-school opportunities" (Wallace, 2009). Low-income students showed a modest gain (d=0.92) in spring to fall testing in math after participating in a summer program (Little et al, 2018). Students from minority groups qualified for an advanced math class in Grade 6 after participating in summer course compared to students who did not participate (Olszewski-Kubilius et al., 2004).
Goal setting for college planning	Early planning and goal setting for post-secondary education	High ability students and their parents frequently request career counseling. Although students may have high ability and may have a strong academic record, they will not necessarily know the steps to take to plan a career path (Assouline, Colangelo, and Heo, 2014). Secondary gifted students value "seminars, discussion groups, advisory sessions, or other learning opportunities that allow students to engage with a like-minded peer group and increase in understanding of giftedness can also promote the exploration of various career paths and societal roles" (Jacobs and Eckert, 2017) High ability students from low-income households drop out in higher number than peers

		from high-income households (see also Wyner et al., 2007). Support for transition periods (high school to college, middle school to high school, etc.) can help with retention of low-income high-ability students (VanTassel-Baska, 2018).
Honors, Advanced Placement® /IB courses	Students take courses with advanced or accelerated content (usually at the secondary level) in order to test out or receive credit for completion of college level course work. (Although one such program is actually designated Advanced Placement®, several such programs exist, e.g., International Baccalaureate.)	A review of research on AP and IB programs, they report that students who take AP and IB courses report high levels of satisfaction with the level of challenge, the teachers, the opportunity to take courses with similar-minded students, and the feeling of being prepare for college coursework. Research from the College Board shows that students who take AP and IB do as well or better than students who do not take these courses. (Hertberg-Davis and Callahan, 2014) "A longitudinal study of identified gifted students reported that, at age 33, 70% of the students who had taken one or more AP courses or exams in high school had advanced degrees, compared to 43% of those who had not taken such courses. The students who took AP courses also appeared more satisfied with the intellectual caliber of their high school experience than their peers (Bleske-Rechek, Lubinski and Benbow, 2004). Students who participate in honors courses while in high school have high academic achievement in their first year of college and have a higher retention rate in college compared to students who did not take honors courses. Students in honors program have higher academic self-concept and high motivation levels than students not in an honors program (Rinn, 2014)
Method of inquiry	Relating content to how things work, methods that are used in the field in order to think like a practitioner in the discipline.	June Maker (1983) proposed that some gifted students are motivated to learn when using the Method of Inquiry curriculum modification that allows them to learn how things work and the ways professionals work. (Rogers, 2002) Robinson, Shore, & Enersen (2007) summarized the research on Renzulli's Type III activities from his Enrichment Triad Model as showing that "highly able students exposed to such curricular options enjoy them and produce from remarkable products." Students who participate in inquiry practices are not missing out on skills or basic knowledge (Gallagher and Stepien,1996)
Mentorship	Student(s) are placed with a subject matter expert or professional to further a specific interest or proficiency, which cannot be provided within the regular educational setting.	Mentorships can be valuable because they can provide real-world experience and role models who can enrich the curriculum (Rogers, 2002). Mentorships also are appropriate for students who have exceptional levels of a talent or advanced knowledge and who need to meet with an expert in the area to continue to grow (Callahan and Dickson, 2014). Reviews of survey and case study research shows that student participation is a valuable path to learn about careers and career pathways and a chance to affirm to the student that the talent or skills is worth pursuing. (Callahan and Dickson, 2014)
Organization	Changing the sequence for how content is taught; for example, teaching the "most difficult" concepts first	Most Difficult First is a strategy that can be used as a first step in curriculum compacting. Students have the option to try the most difficult work, such as the hardest math problems, because working on the easier problems. If the student answers the questions satisfactorily, s/he does not need to complete the rest of the assignment. (Winebrenner, 2001) Researchers found a large variation in student ability within a single grade level.They reported that "20%-49% of students in English language arts and 14%-37% of students in math scored a year or more advanced compared to grade-level expectation. Further, 15% of students in reading and 6% of students in math scored 3 or more years

		advanced." In their classic study, Reis et al. (1993) find that advanced learners know 40%-50% of the grade-level material at the start of any given academic year (Peters, Rambo-Hernandez, Makel, Matthews, and Plucker, 2017 cited in Peters and Brulles, 2018)
Partial day or send- out, pull-together, pull-out, gifted resource room grouping	Removal of advanced learners from the regular classroom for a specific period of time each day or week to work with a trained specialist on differentiated curriculum.	When the content is sufficiently deepened, advanced and differentiated, pull-together programs were shown to be effective (Delcourt, Loyd, Cornell and Goldberg; 1994). "In a study of four provisions for teaching mathematically talented students, one researcher found positive effects for using pull-out grouping to include good interaction between teachers and students, significant progress in level of skills, and increases in motivation. In a mathematics pull-out group with same-age peers, where the students were pulled from different classes other than their regular mathematics instruction, the teacher reported that the group met the needs of her students who showed more ability in mathematics, increased their motivation, and evidenced students' learning new knowledge. The students in the group shared positive attitudes toward the group and the chance to work with similar ability peers. In a second group, which included peers of different ages and abilities within their regular math class, all of the children progressed to the highest level of attainment on the math assessment by the end of the term. These children also reported positive feelings toward the group, and the teacher felt confident their needs had been met at the close of the service" (Dimitriadis, 2012).
Pull-in programs	See partial day/pull-together programs.	When the content is sufficiently deepened, advanced and differentiated, pull-together programs were shown to be effective (Delcourt, Loyd, Cornell and Goldberg; 1994).
Real audiences	Presenting work to a relevant audience for feedback or seeking an expert in the field to evaluate/critique the student's thinking, process or product in order to provide value beyond the classroom. With technology, it's easier than ever to arrange for students to present to a real audience.	Real audiences can increase student motivation, provide a context for learning, and help students develop strategic behavior. When students write for a real audience, the task is often open ended, rather than closed, which leads to deeper processing and increased metacognition (Parsons and Ward, 2011). When students are writing to explain scientific concepts to a real audience, they "translate their existing knowledge into audience-appropriate language, in which students explain, elaborate, and integrate their understanding of science concepts using more than just the technical language of the subject (Chen, 2013). A 2008 post at ASCD gives anecdotal reports on the value of a real audience and authentic work.
Real world problems	Providing learners with a problem or situation to solve that is relevant to their own lives.	In review of differentiation strategies, Tomlinson stated: "Interest-based differentiation is linked to student motivation, productivity, and achievement…and appears to result in positive impacts on learning in both the long and short terms…When students have the opportunity to address questions that they are highly intrinsically motivated to pursue, the groundwork in laid for creative achievement…Additionally, when students select reading material of interest to them (Carbonaro and Gamoran, 2002) or work with mathematics problems personalized to include interest areas (Walkington, as cited in Sparks, 2012), they were more engaged achieved more, and retained understanding better than students who did not have interest-based options" (Tomlinson, 2014)

Regrouping by achievement for subject instruction	Students who are gifted in math or reading are grouped for instruction with similarly gifted students. This usually happens within the whole school or grade level (Walk to Read model). The students may change groups as needed, or indicated, by assessment. Schools using this strategy will have reading, math, etc., within each grade level at the same time each day. High ability students then go to the teacher teaching the curriculum at a faster pace, with more breadth, depth and complexity.	In 25 studies where curriculum remained the same for all groups, there was only a slight gain in academic growth. There are substantial gains however when an alternative curriculum is chosen to meet the needs of mathematically gifted students. Eleven out of 14 studies indicated that students in cross- grade programs achieved an effect gain greater than one (Kulik, 1992). In a study of between-class grouping in combination with curriculum designed for high-ability students (Project M3), researchers found that mathematically talented students were able to grow their conceptual understanding in advanced geometry and measurement topics, including a greater ability to explain their reasoning when exploring these concepts (Garvin et al., 2009)
Skill-based programs delivered through blended learning models	Computer programs, such as Renaissance Learning and Success Maker that allow the student to work at their own pace and give direct, immediate feedback to student and teacher.	ITBS scores of students using a skill-based mathematics program were significantly higher in skills than students who did not use the program (Ysseldyke, Tardrew, Betts, Thill, and Hannigan, 2004).
Specialized curriculum programs, intentional academic programs, groups	William and Mary curriculum, National History Day, Mentoring Mathematical Minds, Accelerated Math, Project Spring, and Project Spring II	Research on Mentoring Mathematical Minds, to cite just one example, showed gains over a similar comparison group on TIMSS, NAEP and ITBS scores for third, fourth and fifth graders. National Center for Gifted and Talented Research. The treatment group gains on the ITBS were on the Concepts and Estimations subtests and on the open-response items from NAEP and TIMMS (Gubbins, 2014) VanTassel-Baska 's research-based Integrated Curriculum Model emphasizes advanced content knowledge that frames disciplines of study; provides higher order thinking and processing; and organizes learning experiences around major issues, themes, and ideas that define understanding of a discipline and provide connections across disciplines. The Integrated Curriculum Model is the guiding theoretical framework for all William and Mary curricula. This curricula produce learning gains among all learners in science, language arts, and social studies (VanTassel-Baska, 2015)
Talent searches, university program	Provision of highly challenging, accelerated learning experiences, usually on a college campus in a specific talent area for highly talented students	"A sample of 2,409 intellectually talented adolescents (top 1%) who were assessed on the SAT by age 13, and provided services through a talent search program, was tracked longitudinally for more than 25 years. Their creative accomplishments, with particular emphasis on literary achievement and scientific-technical innovation, were examined and results showed that distinct ability patterns identified by age 13 foreshadowed creative accomplishments in middle age. Among the sample, participants had earned 817 patents and published 93 books, one had been awarded the Fields Medal in mathematics, and another had won the John Bates Clark Medal for the most outstanding economist under 40" (Park, Lubinski, & Benbow, 2007).
	Students are involved in a study of concepts through theme-based units that stress the application of reasoning to reading, writing, creating high-quality projects, and organizing learning.	A study of advanced literature groups found a significant learning advantage for groups who received theme-based instruction that emphasized the use of reasoning in reading and writing and required high- quality products compared to groups who did not receive theme-based, high-expectation instruction (Van Tassel-Baska, et. al., 2002).

The table is adapted from ***Re-Forming Gifted Education: How Parents and Teachers Can Match the Program to the Child***, by Karen B. Rogers, Ph.D. Reproduced by permission of Great Potential Press, www.giftedbooks.com. Additional information for research gains was taken from Plucker & Callahan (2014*), Critical Issues and Practices in Gifted Education* (2nd ed.), the National Association for Gifted Children and other cited sources.

INSTRUCTIONAL CONSIDERATIONS

The recommendation of The Acceleration Institute (http://www.accelerationinstitute.org) is that a student need not be identified for gifted services as a prerequisite for one of the 20 types of acceleration identified in *A Nation Empowered: Evidence Trumps the Excuses for Holding back America's Brightest Students* (p. 18). These acceleration options range from curriculum compacting in the regular grade level classroom to whole grade skipping to early entrance to college. Less intensive forms of acceleration (e.g., curriculum compacting) may occur in the differentiated Universal Tier or the Supplemental Tier. Students who will need the most intense acceleration intervention are highly or exceptionally gifted. Early speech, reading, and other developmental skills are indicators of a highly gifted child. *The Iowa Acceleration* Scale (IAS) is a researched tool used across the nation to assist districts in making effective, whole-grade acceleration decisions for students grades K-8 (http://www.accelerationinstitute.org). A small percentage of students require the most radical acceleration including post-secondary enrollment options (PSEO), early entrance, specialized counseling, long-term mentorships or participation in a specialized classroom or school for gifted students. They require a curriculum that differs *significantly* in pace, level, complexity, and abstraction from same-age peers. The intensive tier instruction may take place in addition to supplemental tier differentiated instruction or it may replace it entirely. If a student's services move from universal to intensive, the scope of the curriculum should be reviewed to identify gaps in learning.

The highly gifted child needs an individual learning plan that will make provisions for alternative learning opportunities, which may include grade skipping/telescoping or curriculum compacting. In addition, early identification of these individuals will help to ensure that programming may be planned for them to allow for continued growth at each student's potential. For some students, regular differentiation and instructional management/delivery are not enough. The higher the IQ or ability of the student, the more acceleration and modifications must be put in place in order to maintain the balance between the student and his/her curriculum.

THE LEARNER

Asynchronous Development

In average children, intellectual, physical, and emotional development progresses at about the same rate. That is, the development is in "sync." An average 3-year-old has the intellectual and physical abilities as well as the emotional maturity most other 3-year-olds have. However, in many high ability/high potential children, the development of those areas is out of "sync." They do not progress at the same rate. A high ability/high potential 3- year-old child's developmental profile could look like this:

Intellectual ability = age 6 Physical ability = age 3 Emotional maturity = age 2

Or this: Intellectual ability = age 7 Physical ability = age 3 Emotional maturity = age 4

"The Acceleration of Students: What We Do vs. What We Know"

by Karen B. Rogers and Richard D. Kimpston

Teachers and administrators have a research-supported menu of accelerative practices to select from that result in substantial academic achievement gains for students. Very few options, however, appear to directly affect students' social skills and self-concept. If teachers have avoided offering these practices to bright students out of a concern for the social and emotional effects, such misgivings should be laid to rest. Those who wish to enhance outcomes in affective areas for accelerated students, however, might consider the assistance of a school counselor or a support group.

With careful attention to the cognitive, social, and emotional needs of prospective accelerated students, teachers and administrators can recommend from an array of practices with the confidence that the child will not only survive but will thrive in a more challenging learning environment.

Or this: Intellectual ability = age 6 Physical ability = age 4 Emotional maturity = age 3

Or any other combination of the three. The higher a child's IQ is, the more out of "sync" his/her development is likely to be.

From "Asynchronous Development" by Carol Bainbridge at About Parenting. http://giftedkids.about.com/od/glossary, 2014.

The National Association for Gifted Children offers this advice for the adults who interact with asynchronous development in a gifted children:

"It is important for parents, teachers, and caregivers to realize that 'one size does not fit all' for gifted children--and even those with similar IQ scores may not have similar skills, personalities, rates of development, abilities, or interests. The individual traits of one gifted child may be extremely different from another. And, the more highly gifted the gifted child, the more asynchronous she may be. For example, it is not unusual for a 7-year-old highly gifted child to be reading at a 6th grade level, performing math tasks at a 4th grade level, and have fine motor skills at a 2nd grade level. At times, the child may appear to be functioning socially at a level far below her age mates. "

Exceptionally Advanced

Approximately 1% of the top 1% of students are profoundly gifted. In an article from *Gifted Child Quarterly* Miraca Gross (1992) shares the following research about exceptionally gifted children:

> Exceptionally gifted children appear in the population at a ratio of fewer than one in 10,000. Research has repeatedly found that these children differ quite significantly from moderately gifted age-peers on many cognitive and affective variables. Because of this, it is not enough to place them in part-time programs, such as a resource room or pull-out, which are designed for moderately gifted students; they require full-time grouping with children closer to their own mental age and levels of socio-affective development. Research suggests that exceptionally and profoundly gifted students are best served by a program of radical acceleration incorporating a number of grade-skips appropriately spaced through the student's school career, supplemented with subject acceleration where it is required. It is important that the student is also provided with lateral enrichment at each stage. Radical acceleration provides the extremely gifted child with the intellectual and social companionship of children at similar stages of cognitive and affective development. Exceptionally gifted children retained with age-peers, or accelerated by only one year, are at serious risk of peer rejection and social isolation…
>
> *It is now generally understood and accepted that a child's level of social and emotional development is more highly correlated with his mental age than with his chronological age* (Callahan & Kauffman, 1982; Tannenbaum, 1983; Janos & Robinson, 1985). The significance of this is immense when dealing with the extremely gifted since the higher the IQ, the greater the discrepancy between chronological and mental age, and thus the wider the gap between the psychosocial development of the gifted child and that of his age-peers.
>
> The common perception of the extremely gifted as eager, academically successful young people who display high levels of task commitment has been refuted by research which demonstrates that many highly gifted children underachieve seriously in the regular classroom, and that, by the end of elementary school, many have almost completely lost the motivation to excel (Pringle, 1970; Painter, 1976; Whitmore, 1980; Gross and Feldhusen, 1990).

The complete article "The Use of Radical Acceleration in Cases of Extreme Intellectual Precocity" may be found at http://www.davidsongifted.org/Search-Database/entry/A10099.

These **interventions** move a student through an educational program faster than the usual rate or at an age younger than the typical age.

INTENSIVE TIER: TYPES OF ACCELERATION

Term	Description	Research Gains
Single subject acceleration	A student bypasses the usual progression of skills and content mastery in one subject where great advancement or proficiency has been observed. The learner will progress at the regular instructional pace through the remaining subject areas.	A student is likely to have 1.57 years' academic growth in one year of time. Subject acceleration in mathematics resulted in significant positive academic increases for both elementary and secondary students. It seems logical that since this form of acceleration accounts for only a small time change in the regular routine, no significant differences in emotional and social well- being would be noted. (VanTassel-Baska and Johnsen, 2015)
Whole- grade skipping	A learner is double promoted to bypass one or more grade levels.	A student is likely to have 1.49 years' academic growth in one year of time, and 1.31 years' social growth in one year of time. Grade skipping for bright children also appears to be very beneficial. The strongest research-supported academic and social effects appear to be in grades three through six.
Early entrance to school	A gifted child who shows readiness to perform schoolwork enters kindergarten or first grade one to two years earlier than the usual beginning age.	A student is likely to have 1.49 years' academic growth in one year of time. Early entrance to school appears to be a relatively safe accelerative option for bright children. If this were the only option offered a gifted child, it would capitalize on a child's natural intelligence as early as possible and would allow the child to establish a peer group early. As a result, the challenge of making new friends would be encountered only once, instead of with each decision to accelerate.
Non-graded classroom	A learner is placed in a classroom undifferentiated by grade levels where he/she works through the curricular materials at a pace appropriate to individual ability and motivational level.	Bright students in a non-graded or multi-grade classroom environment showed substantial, positive academic gains at the elementary grade levels. Although no research on social outcomes could be located, it seems likely that bright children who move through the curriculum at a comfortable but accelerated pace would not find social rejection as readily as when they stand out as significantly different at one grade level.
Curriculum compacting	The regular curriculum of any or all subjects is tailored to the specific gaps, deficiencies, and strengths of an individual student. The learner tests out or bypasses previously mastered skills and content, focusing only on mastery of deficient areas, thus moving more rapidly through the curriculum.	A student is likely to have 1.83 years' academic growth in one year of time. Curriculum compacting whereby the student begins each school year at his/her actual level of performance in each subject-results in significantly positive academic effects, especially in mathematics.
Grade telescoping	A student's progress is reorganized through junior high or high school to shorten the time by one year. Hence, junior high may require two years instead of three, or high school may require three years instead of four.	A student is likely to have 1.4 years' academic growth in one year of time. Another implication from our analysis is that allowing children to progress through three years' curriculum in two years' time, or grade telescoping, showed very positive academic outcomes for both junior and senior high students.
Concurrent enrollment	A student attends classes in more than one building level during the school year—for example, high school for part of the day and junior high for the remainder.	A student is likely to have 1.22 years' academic growth in one year of time.

Term	Description	Research Gains
Courses (AP® and IB)	A student takes courses with advanced or accelerated content (usually at the secondary level) in order to test out or receive credit for completion of college level course work. (Although one such program—the College Board's AP® and Pre-AP® classes—is actually designated Advanced Placement®, several such programs exist, for example, International Baccalaureate.)	A student is likely to have 1.27 years' academic growth in one year of time. The potential, positive effects of students having been adequately challenged and having been given more time to enroll in courses better suited to their interests and ability levels.
Mentorship	A student is placed with a subject matter expert or professional to further a specific interest or proficiency, which cannot be provided within the regular educational setting. Davidson Institute's Mentoring Guidebook could be a useful reference.	A student is likely to have 1.57 years' academic growth in one year of time, 1.47 years' social growth in one year of time, and 1.42 years' self-esteem growth in one year of time.
Early admission to college	Student skips some of high school and attends college.	A student is likely to have 1.3 years' academic growth in one year of time. Allowing bright students to bypass at least one year of high school to enter college full-time resulted in significantly positive academic outcomes. Socialization and psychological adjustment showed no change. There has to be some concern, however, for the high school student who opts for early admission: not completing a high school diploma. Financial constraints, poor health, family crises, or any combination of circumstances could keep the student from completing college, in which case he or she has no educational certification.
Credit by examination	Through successful completion of tests, a student is allowed to receive a specified number of college credits upon entrance to college. (Advanced Placement® and the College Level Examination Program are two examples.)	A student is likely to have 1.59 years' academic growth in one year of time. There appeared to be a strong relationship between testing, out of college courses (credit by examination), and subsequent college performance in those subject areas.
Distance learning	Enrollment in college or other challenging courses while still enrolled with age peers (Stanford University's EPGY, for example).	Similar to subject acceleration.
Extra-curricular programs	• Johns Hopkins Center for Talented Youth • Duke University Talent Identification Program • Center for Talent Development (CTD) Northwestern University For additional resources: http://www.hoagiesgifted.org/academics.htm	
Special schools for the gifted	For example, Davidson Academy	http://www.davidsonacademy.unr.edu/

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LOW-INCOME STUDENTS

THE LEARNER

Low-income students are defined as those who meet the criteria for free and/or reduced lunch in Iowa schools, reflecting the federally designated poverty level and guidelines set by the Food and Nutrition Service of the U.S. Department of Agriculture (Van Tassel-Baska, 2018).

Low-income students who are not members of minority groups tend to exhibit similar characteristics to those who are members in several respects. Both groups may appear to be socially marginalized in school settings due to their socio-economic backgrounds in respect to clothing, mannerisms, and circle of friends (Van Tassel-Baska, 2018). Students from impoverished backgrounds are at greater risk of lower levels of motivation when compared to children who are not from poverty (Ambrose, 2013). Special challenges include higher rates of teenage mothers, absent fathers, parents without resources, health problems, concerns about safety and daily survival, and increased risk of homelessness (Duncan & Murnane, 2011; Stormont, Stebbins, & Holliday, 2001).

Because of denial of material possessions taken for granted by other students, these students have often learned disappointment, may feel alienated, and may choose to become underachievers (Olszewski-Kubilius, 2007). Low-income white, minority, or culturally diverse students who aspire to a better life typically display learning characteristics that include openness to experiences, fluency in thinking, preference for hands-on applications, real-world connections to what is being learned, and a quickness to blend feelings with thoughts (Lakin & Lohman, 2011).

INSTRUCTIONAL CONSIDERATIONS

When districts and schools incorporate into their school culture the belief that low-income students can also be high-achieving students and then develop protocols for identification, their focus can then be to provide services to students. The strategies and approaches described throughout this guide are appropriate for low-income high-ability students, provided educators consider their local population and the Supportive School Culture School Responses below (see chart below). As districts monitor the percentage of low income students and other underrepresented learners who are receiving services to meet their advanced or gifted needs, these strategies are designed to support equitable approaches in service of each learner making at least one year's growth. Consider building these in to best practices across all three Tiers.

Classroom strategies to consider:

- Scaffolds that provide support for elevating and sustaining higher level thinking.
- Use of multicultural readings and materials as a stimulus for learning at advanced levels.
- Sustained lessons that use activities requiring higher level thinking, problem solving, and creative expression.
- Questions that emphasize thinking in different modes including analysis, synthesis, and evaluation.
- Assessments that are advanced, open-ended, and require problem solving and higher level thinking
- The use of the integration of skills and higher level concepts within selective content.
- The use of metacognition as an organizer for instruction and as a basis for reflection on one's learning. (VanTassel-Baska, 2018)

SUPPORTIVE SCHOOL CULTURE

Low-Income Learner Characteristics	School Response
Independent mode of operation	Opportunities for learning from productive social interactions
Pragmatic outlook	Practical applications of knowledge. Hands-on application to real world connections
Fluid intelligence developed through need to survive	Open-ended problem solving; flexibility in finding solutions; creative expression

Low-Income Learner Characteristics	School Response
Like to verbalize their thinking	Develop elaborative oral skills. Allow assignments to blend feelings with thoughts. Written skills may lag in development
May have skills gaps	Targeted tutorial by older student or adult of similar background
Miss friendships abandoned by new opportunities	Mentors, tutors that are older students or adults who are like them
Want to make their world better	Encourage development of metacognition skills. Support their openness to new experiences
Desire to achieve upward mobility	Develop skills for planning, goal setting, monitoring and assessing one's own progress

Developed from Achievement Unlocked: Effective Curriculum Interventions with Low-Income Students by Joyce Van Tassel-Baska (2018). Gifted Child Quarterly, 62 (1), pg. 69-70.

THE LEARNER

Students who are "twice-exceptional" are identified as high ability/high potential and are also identified with one or more disabilities or learning conditions. Gifted students with disabilities are at risk because their educational and social/emotional needs often go undetected. The resulting inconsistent academic performance can lead educators to believe twice-exceptional students are not putting forth adequate effort. Hidden disabilities may prevent students with advanced cognitive abilities from achieving their potential. The frustrations related to unidentified strengths and disabilities can result in behavioral and social/emotional issues. For some twice-exceptional students, behavior plans become the focus of their interventions. The behaviors are managed, but the underlying disabilities are never addressed. School can become a very frustrating experience for struggling twice-exceptional students, their teachers, and parents.

The defining characteristics of the twice-exceptional learner is evidence of high performance or potential in a gift, talent, or ability combined with a disability that suppresses the student's ability to achieve to his/her potential (Brody and Mills, 1997; Assouline, Foley-Nicpon, and Fosenburg, 2013; and Foley-Nicpon, Doobay, and Park, 2017). Disabilities may include dyslexia, auditory processing problems, visual processing deficits, emotional-behavioral disabilities, ADD or ADHD, and autism spectrum disorder. Twice- exceptional students will be found in all three tiers and will need interventions that will differ from interventions for students who have disabilities but who are not gifted or of high ability. Individual student data may show exceptional ability in one area and a weakness that is an extreme disparity for the individual, even if the weakness is demonstrated at age-grade level.

INSTRUCTIONAL CONSIDERATIONS

Ongoing collaboration among special education professionals, general education professional gifted education professionals, and families is critical for identification and long-term planning for these students. It is essential that the disabilities and strengths are identified early so appropriate interventions can be provided at optimum times. Unfortunately, the struggles of many twice-exceptional students go unnoticed for many years, resulting in learning gaps and undeveloped potentials.

An important note regarding education of twice-exceptional students

The information on the following table should be understood as characteristics that are typical of many children who are gifted and who also have a disability. This information should not be used to define characteristics of all such children.

Twice-exceptional children do not form a simple, homogeneous group: They are a highly diverse group of learners.

Educators need to be perceptive in recognizing contradictory high abilities and disabilities so that each twice-exceptional child may be identified as such and receive modifications (compensation, remediation, acceleration, etc.) to meet his/her needs. Each of these students has a unique set of abilities and disabilities, so the specific strategies used in the classroom will vary from student to student.

TWICE-EXCEPTIONAL STUDENTS: SAMPLE STRATEGIES

Term	Description	Research
Appropriate identification	Teachers need to be sensitive to clues that seem to indicate contradictions in abilities and look to sub-score discrepancies on composite measures from standardized or intelligence test scores. Possible examples: • above grade extensive vocabulary/struggle with spelling basic words • strong verbal expression/poor illegible handwriting • good listening comprehension skills/low self-concept • sophisticated sense of humor/difficulty engaging in social aspects of the classroom • difficulty sitting still/can become deeply immersed in special interests or creative activities • reason abstractly and solve complex problems/dislike rote memorization • high verbal reasoning but low quantitative reasoning (or any pairing of very high with unexpectedly low sub-scores) Discrepancy models and MTSS models alone may miss the identification of 2e students. Consider a comprehensive or holistic assessment which "should include diverse forms of assessment, such as standard measures of achievement, ability, psycho-social functioning, executive functioning, cognitive processing, and clinical interviews." (Foley-Nicpon, Doobay, and Park, 2017) This report provides recommendations for gifted students who are on the autism spectrum disorder, have ADHD, or have other developmental, emotional or behavioral disabilities.	Gifted students with learning disabilities may appear to be average students, performing adequately on grade-level measures, when looking at composite assessment scores that average across sub-scores because the high and low scores average out (Foley-Nicpon, Doobay, and Park, 2017). Some researches claims that the averaging of scores can result with gifted students with disabilities not being diagnosed until college (McEachern and Barnot, 2001). Score discrepancies on verbal, quantitative, and figural reasoning measures are more common among high and low ability students than among average ability students. Although some gifted students may have a "high flat" profile," many will not, and those students may miss being identified for gifted services while their low score may be flagged for remediation. Lohman et al urge the use of ability profiles rather than composite scores. (Lohman, Gambrell, and Lakin, 2008)

Compensation and remediation	• Create a transition plan to emphasize areas of giftedness as well as needs for remediation when students are moving from one school level to another. • Develop strategies that nurture the student's potential. • Identify learning gaps and provide explicit instruction. • A case manager who is responsible for facilitating communication between counselors, special educators, gifted educators, and general educators; facilitates collaboration to plan curriculum. • Modifications and connect students with resources and technology tools to compensate for weaknesses. • Provide course options that ease course load and accelerate strength areas, such as summer school and Internet courses. • Teach and encourage students to use compensation strategies, such as talking to professors, using other student's notes to supplement their own, taking fewer classes, taking advantage of extended time for testing, listening to books on tape, and utilizing technology to compensate for weaknesses. • Service provision for special needs • Promotion of self-understanding and self-advocacy skills	Twice-exceptional students are particularly vulnerable during transitions from one level of education to the next. One program in New Mexico found success with a plan designed to follow students from elementary through high school (Nielsen, Higgins, Wilkinson, and Wiest Webb, 1994). A study of twice-exceptional students who were successful in college found that all of the students in the study used compensation strategies. They were also willing to work harder than their peers to obtain the same level of results (Reis and Neu, 1994). 2e students can benefit from academic acceleration in their strength area (Foley-Nicpon and Cederberg, 2015). 2e students may show psychosocial benefits, such as impacts in academic self-efficacy, from participating in summer enrichment programs (Cederberg, Foley-Nicpon, and Park, 2015) Benefits of educators using a strength-based approach rather than a deficit approach to 2e student needs "teachers who prioritized developing relationships with twice-exceptional students and provided consistent implementation of the strength-based model helped facilitate positive outcomes for twice-exceptional student acceleration. These outcomes included developing positive social skills with peers and teachers; overcoming some social, emotional, and cognitive challenges; and building expertise in areas of talent" (Baum, 2014, cited in Foley-Nicpon and Cederberg, 2015).

Social and emotional Support	• Twice-exceptional students should receive counseling to develop self-esteem and high self-efficacy. • These students need many opportunities to exercise their areas of high ability. • They need supportive adults at home and at school. • Twice-exceptional students should enhance their capacity to cope with mixed abilities. • Counselors can provide support in career guidance, college transition planning, bullying and peer interactions	In a study of the resiliency and risk factors of twice- exceptional students, it was found that they are at great risk for poor self-concept, poor self-efficacy, hypersensitivity, emotionality, and high levels of frustration, anxiety, and self-criticism. The students who were more successful had good self-esteem and high self-efficacy. Those who had supportive adults also were more successful students (Dole, 2000). "Twice exceptional students may present with one or more of the following social, emotional or behavioral characteristics: unhealthy perfectionism, intensity of emotions, low self-esteem, particularly as a learner, intense frustration and readiness to give up when faced with difficult academic tasks, feelings of low self-efficacy (Baum and Owen, 2004; Baum, Owen, and Dixon, 1991; Olenchak and Reis, 2002; Pfeiffer and Stocking, 2000; Whitmore, 1981). It has been reported that some twice exceptional students with a specific learning disability present with depression and even suicidal ideation (Reis, Neu, and McGuire, 1995). This author has observed in his private practice that twice exceptional students often adopt fixed mindsets about their own abilities. The adoption of a fixed mindset contributes to fragile self-confidence and increasing reluctance to stick with difficult academic assignments" (Dweck, 2006). "An innovative investigation by Gerber and Ginsberg (1990) investigated eminent adults with a documented specific learning disability. They sought to identify coping strategies that contributed to this group's success. Their cohort of successful adults reported the following things as particularly helpful during their schooling: nurturing self-control and empowerment, building persistence and grit, an emphasis on accomplishing goals, reframing their learning disability as a personal attribute for which they can develop compensatory strategies, and de-emphasize the disability. Olenchak and Reis (2002) provide promising educational interventions for the twice exceptional gifted/specific learning disability student. Their recommendations include individually tailored enrichment activities, mentorships, and learning compensatory strategies" (Pfeiffer, 2015)

Adapted from ***Re-Forming Gifted Education: How Parents and Teachers Can Match the Program to the Child***, by Karen B. Rogers, Ph.D. Reproduced by permission of Great Potential Press, www.giftedbooks.com. Additional information for research gains was taken from a chapter by Foley-Nicpon, Doobay, and Park (2017) *Guiding Principles to Identify and Serve2e Students*, Sage Knowledge.

INSTRUCTIONAL CONSIDERATIONS

"Outstanding talents are present in children and youth from all cultural groups, across all economic strata, and in all areas of human endeavor" (Jacob K. Javits Gifted and Talented Students Education Act of 1988). High ability and high potential Culturally and Linguistically Diverse (CLD) students are often underrepresented as advanced learners or in gifted and talented programs (Fordham Institute, 2018).

Traditional assessments, data analysis, and identification procedures "may not allow for CLD student abilities or talents to be captured" (Designing Services and Programs for High-ability Learners, Jeanne H. Purcell and Rebecca D. Eckert, 2017).

According to the National Association for Gifted Children's position statement, there are four dimensions to consider when serving the needs of CLD advanced learners.

- Culturally Sensitive Identification Protocols
- Early and Continuous Access to Advanced Curriculum
- Essential Supports for CLD Students
- Effective Home., Community, and School Connections

Identifying CLD learners' cognitive and affective needs should take into account both academic screeners and other academic diagnostics. Consider student portfolios, student and parents interviews, teacher checklists, observations, and other informal data-gathering measures to determine the range of needs advanced CLD learners possess.

> Culturally and Linguistically Diverse (CLD) students need special efforts.
>
> From: *National Excellence: A Case for Developing America's Talent* (1993)
>
> Special efforts are required to overcome the barriers to achievement that many economically disadvantaged and minority students' face.

Establishing a process that is inclusive of the differences of CLD advanced learners considers and accounts for culture, language proficiency and development in first and second languages, prior schooling, and parent/teacher interview or behavioral inventories (such as the Renzulli Hartman Scales). The percentage of a district's identified advanced CLD students should mirror the percentage of the CLD population in the district as a whole. As such, if one-fourth of the district population are CLD students, then one-fourth of the identified advanced students should be CLD students.

To better understand the reasoning ability of CLD advanced learners, districts may administer nonverbal reasoning assessments such as the Raven's Progressive Matrices, the Cognitive Abilities Test (CogAT) Nonverbal Battery, or the Naglieri Nonverbal Ability Test (NNAT).

Additionally, early and continuous access to advanced curriculum is necessary for advanced learners so that they are exposed to cognitively appropriate standards and content alongside essential supports for CLD advanced learners. These support vary based on learners' academic and affective needs. For example, "The establishment of cohort groups of students with shared cultural background has been found to have positive impact on retention, promoting a sense of belonging and support. Instituting gender- and culture-specific mentoring programs potentially enhances self-esteem and provides strong role models. School counselors may also facilitate small-group sessions to address concerns" (NAGC, 2011).

Finally, consider effective home, community, and school connections that will provide wraparound services for the diverse needs of these learners. These services may include but are not limited to:

- primary health, mental health, and dental care;
- family engagement, including adult education;
- preschool learning;
- academic enrichment;
- expanded after school learning time or summer programming;
- mentoring; and
- postsecondary education and career options awareness. (NEA Position Statement on Wraparound Services) Meeting the needs of CLD advanced learners necessitates collaboration among stakeholders and prioritizing cultural competency at the classroom, building, and district, and community levels.

Characteristics of CLED advanced learners: Most advanced learners share certain characteristics. CLED populations may demonstrate these characteristics in ways that are different from the dominant culture and so sometimes these characteristics may be perceived as negative.

CLED STUDENTS: CHARACTERISTICS

Characteristic	Dominant Culture	Different Cultures
Curiosity	Raises hand to ask question. Stays on task. Expresses self well. Expects shared experiences and common understandings. Curious about how things work more than about people.	May think questioning is rude. May be frustrated by not having the language necessary to ask questions. Does not have foundation of shared experiences. Curious about different experiences. May experience lack of understanding by teachers, peers and others. May enjoy questions with "shock value." More curious about people than things.
Task Commitment	Sticks with task. Confident in ability.	Stubborn. May have own priorities. May not see relevance in school work.
Sense of Humor	Begins with shared experiences and understandings. Uses dominant language with others. Uses subtleties with language.	May have difficulty showing humor in dominant culture's language. May be "smart alecky." May use language destructively, use put-downs. May be class clown. May demonstrate humor, tell jokes, in one language and not the other.
Keen Interests	Good at many things. Enjoys learning new things. Enjoys collections. Enjoys book series	Unable to make decisions. Makes decisions without regard for consequences. Appears random. Has trouble finding closure.
Use of Language	Expresses self well in formal register. Can elaborate well on others' ideas. Fairly even language profile.	Very expressive in casual register. Has trouble listening and staying attentive to others. Uneven in ability to peak, listen, read, write. Makes clever, silly or inappropriate responses. Opinionated, good talker but unable to support ideas or provide substance to ideas. Tells stories, enjoys listening to stories in own language, culture. Acquires new language quickly.

Self Efficacy	Feels safe. Feels in control.	Feels unsafe, insecure. Feels like a victim.
Problem Solving	Good at solving teacher generated problems. Applies learned rules to problem solving.	Good at solving "street" problems. Creative in fending for self. May not be interested in following rules.
Asynchronous	Taken care of by adults. Often protected from adult concerns.	May be responsible for younger siblings. May act as translator and interpreter for adults. May be needed, used in adult situations.

Adapted from Special Populations in Gifted Education: Understanding Our Most Able Students from Diverse Backgrounds (2010), edited by Jaime A. Castellano and Andrea Dawn Frazier. Published by Prufrock Press, INC, www.prufrock.com.

Paula Olszewski-Kubilius and Jane Clarenback in Unlocking Emergent Talent: Supporting High Achievement of Low-Income, High-Ability Students recommends best practice for schools to create an environment in which advanced students from diverse populations including CLD can thrive. (Olszewski-Kubilius and Clarenback, 2012)

SUPPORTIVE SCHOOL CULTURE

School cultures that exalt individual differences of all kinds and value and reward high academic achievement create contexts in which low-income, high-ability students from all backgrounds can thrive. Recommendations to create such environments include:
Create a school culture that values individual differences of all kinds, including cultural and linguistic differences, and sees these as assets rather than deficits.
Create a school culture that values and rewards intellectualism and academic achievement in all students.
Provide multicultural training (e.g., racial, geographical, socioeconomic) to all educational staff focused on eliminating deficit thinking.
Examine policies and procedures regarding the identification of giftedness, selection for advanced programs, and curriculum within programs to ensure that they do not inadvertently present obstacles or disincentives to low-socioeconomic students.
Create a school culture that views parents and the community as partners in the education of their children and values and actively cultivates their input and participation.

CLOSING THOUGHTS

Serving high ability/high potential students in a rural, local control educational setting like Iowa may seem like a daunting task. Statements like the ones below are common, but in each case, the response reveals a reason to seek a creative solution:

Statement	Response
We don't identify students until third or fourth grade.	Iowa Code requires schools to identify and provide qualitatively differentiated instruction to students from the total school population (K-12) whose academic needs are beyond the regular classroom. Iowa school receive funding based on K-12 enrollment to provide for K-12 gifted programming services (Iowa Code 257.44 Gifted and talented children defined, 2) 281—Chapter 59 Gifted and Talented Programs and 3) 256.11 Chapter 12 General Accreditation Standards - 12.5 (12). By third or fourth grade, many advanced learners will *already* have developed negative coping strategies for their boredom. These will have to be "unlearned," making transition to working to the student's potential even more difficult, or making it appear that age peers have "caught-up" with the gifted student who was not properly taught due to academic atrophy.
We have after school enrichment that the advanced learners can go to, so our gifted program is an after-school program.	**Chapter 59.5(2)** *Development of curriculum and instructional strategies.* The program of instruction shall consist of content and teaching strategies that reflect the accelerative pace, intellectual processes and creative abilities that characterize gifted and talented students. A linkage between the selection of students, the anticipated student outcomes and the special instructional programs shall be evident. Learning activities shall provide for the development of skills which are beyond the scope of the regular classroom, introduce advanced concepts and contents, and offer students a greater latitude of inquiry than would be possible without the specialized instructional program. Specialized instructional activities shall be those not ordinarily found in the regular school program and may include, but shall not be limited to: a. A special curriculum supplementing the regular curriculum, using a high level of cognitive and affective concepts and processes. b. Flexible instructional arrangements such as special classes, seminars, resource rooms, independent study, student internships, mentorships, research field trips, and research centers. Further, learners are advanced all day every day, not just after school.

Statement	Response
Our smart kids are scoring in the 99th percentile of their grade level, so we know that they are doing well.	The overriding obstacle in discovering highly gifted children through testing is the ceiling effect, operationally defined as the clustering of scores at the upper limit of the test (Hollingworth, 1916). Group aptitude and achievements tests and some individual tests are simply too easy for highly gifted students. Ninety-ninth percentile scores on annual tests may please educators and parents, but they do not yield a true picture of the specific functioning of the child. For the highly gifted child, grade-level test scores tell only the percentage of students that performs below the individual but obscure what the child could have achieved had the test included appropriately difficult items. The problem is analogous to that of trying to measure the heights of 12 year old children using a measuring stick that is only 5 feet long. Many children can be measured using the stick, but we cannot differentiate among those who are 5 feet tall and those who are almost 7 feet tall (Stanley, 1990). The solution is to use a longer stick. With testing, the solution is to use an above-level test. Hansen, J. (1992). Discovering highly gifted students. *Understanding Our Gifted*, 4(4).

Meeting the unique needs of advanced learners does not have to be expensive or complicated. Sometimes, what is necessary is that a teacher or counselor focuses on the student's profile and creates a plan to challenge that student both in and outside of the regular classroom. Ultimately, each school district needs a creative, flexible, thoughtful, organized approach to developing appropriate learning strategies for advanced learners in order for them to learn, grow, thrive, and meet their potential.

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