Uplift CTE/Tech: Course Structure

The purpose of the Course Structure is to set a vision of excellence for CTE/Tech. Establishing a shared vision is a fundamental part of achieving our goal of pushing all scholars to and through college. Understanding that visions naturally tend towards lofty and sometimes intangible, the Course Structure provides concrete guidance as to how an Uplift teacher might go about achieving the CTE/Tech vision in his or her classroom. It is a tool that:

- establishes instructional non-negotiables;
- provides lesson frameworks and specific strategies to support rigorous and aligned instructional execution;
- clarifies course requirements; and
- suggests opportunities for additional learning about the subject area.

In addition to the above listed tools, the CTE/Tech Course Structure gives further clarity to IB's philosophy of instruction. It is a primarily IB driven document and brings to life Uplift's commitment to rigorous, college-ready instruction.

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I. CTE/Tech Vision

As a CTE program, we strive to inspire innovation, collaboration, and engagement within our classrooms to build a strong foundation of college and career readiness skills that enable scholars to be successful in both current and emerging technologies.

CTE/Tech at Uplift actively engages **four college and career readiness skills: think, know, act, and go.** Learning is balanced as teachers provide explicit, direct instruction of skills and strategies when scholars lack background knowledge and authentic opportunities for inquiry based learning when they do not. The end goal is to create lifelong learners equipped with college and career ready communication and critical thinking skills to become internationally minded, responsible members of their local, national, and global communities.

Nature of CTE/Tech Courses

At Uplift Education, we strive to create an environment where scholars are able to build a set of skills that will help them successfully meet the demands of college and career. The three main priorities of the network CTE/Tech department are **computational thinking, IB assessment,** and **literacy**. This Course Structure aims to give teachers guidelines of how to maneuver these priorities in their classrooms.

Middle School Technology Applications is focused on learning about the use of software and hardware in technology and the application of practical, creative, and computational thinking skills to solve design problems. Computational Thinking at Uplift is defined as a problem-solving process that involves designing a solution. It is a collection of diverse skills to do with problem solving that result from studying the nature of computation. It includes some obviously important skills that most subjects help develop, like creativity, ability to explain, and team work. It also consists of some very specific problem solving skills such as the ability to think logically, algorithmically, and recursively. At minimum, computational thinking strategies should be included on a daily basis in the CTE/Tech classroom. Click here to view a chart for better understanding of the level of computational thinking scholars can achieve based on their grade level.

High School CTE is focused on preparing scholars in knowledge and skills needed to pursue high skill employment in a global marketplace and engage in a rapidly changing economy. CTE has 16 Career Clusters which were validated through a national effort managed by the National Association of State Directors of CTE Consortium (NASDCTEc). These are designed to streamline secondary and post-secondary CTE programs with expectations of what knowledge and skills are needed for success in the workplace. At Uplift, we focus on four of these clusters; Arts, AV Technology and Communication; Information Technology; Science, Technology, Engineering, and Math; and Health Sciences. Although high school courses take place in a technology lab, our courses are more about the art of designing and creating for a specific outcome. Click here to view a chart for better understanding of career clusters and related student organizations.

Tech/CTE courses also prepare scholars for career readiness and offer the opportunity to graduate with an industry certification. The purpose of industry certification is to assure that scholars are adequately prepared for success in the current labor market. By using industry approved and recognized certification exams, we are able to best evaluate our teaching and learning in the CTE program. This also helps us to identify blind spots in our curriculum. Students are tested using national or international standards, means everyone is tested against the same knowledge and skills objectives using a standardized testing approach. Students holding such certifications can port them anywhere in the country or in the world. Finally, these show the student has mastered these knowledge and skills, giving them a leg up on the competition when applying for a job.

Nature of MYP Design

Design, and the resultant development of new technologies, has given rise to profound changes in society, transforming how we access and process information, adapt our environment, communicate with others, solve problems, work and live. MYP design challenges students to apply practical and creative-thinking skills to solve design problems; encourages students to explore the role of design in historical and contemporary contexts; and raises students' awareness of their responsibilities when making design decisions and taking action.

Inquiry and problem-solving are at the heart of design. MYP design requires the use of the design cycle as a tool, which provides: the methodology to structure the inquiry and analyse problems; the development of feasible solutions; the creation of solutions; and the testing and evaluation of the solution. In MYP design, a solution can be a model, prototype, product or system independently created and developed by students.

MYP design enables students to develop not only practical skills but also strategies for creative and critical thinking.
The aims of MYP design are to encourage and enable students to:

- enjoy the design process, and develop an appreciation of its elegance and power
- develop knowledge, understanding and skills from different disciplines to design and create solutions to problems using the design cycle
- use and apply technology effectively as a means to access, process and communicate information, model and create solutions, and to solve problems
- develop an appreciation of the impact of design innovations for life, global society and environments
- appreciate past, present and emerging design within cultural, political, social, historical and environmental contexts
- develop respect for others' viewpoints and appreciate alternative solutions to problems
- act with integrity and honesty, and take responsibility for their own actions developing effective working practices.

*Excerpt from *Middle Years Programme Design Guide*. Cardiff, Wales: International Baccalaureate, May. 2014. PDF.

Nature of DP Film

Film is a powerful and stimulating art form and practice.

The DP film course aims to develop students as proficient interpreters and makers of film texts. Through the study and analysis of film texts, and through practical exercises in film production, the film course develops students' critical abilities and their appreciation of artistic, cultural, historical and global perspectives in film. Students examine film concepts, theories, practices and ideas from multiple perspectives, challenging their own viewpoints and biases in order to understand and value those of others.

DP film students experiment with film and multimedia technology, acquiring the skills and creative competencies required to successfully communicate through the language of the medium. They develop an artistic voice and learn how to express personal perspectives through film.

The film course emphasizes the importance of working collaboratively. It focuses on the international and intercultural dynamic that triggers and sustains contemporary film, while fostering in students an appreciation of the development of film across time, space and culture. DP film students are challenged to understand alternative views, to respect and appreciate the diverse cultures that exist within film, and to have open and critical minds.

At the core of the DP film course lies the need for creative exploration and innovation. Students are challenged to acquire and develop critical thinking, reflective analysis and the imaginative synthesis that is achieved through practical engagement in the art, craft and study of film.

*Excerpt from *Diploma Programme Film Guide*. Cardiff, Wales: International Baccalaureate, Aug. 2017. PDF.

Nature of DP Computer Science

Computer science requires an understanding of the fundamental concepts of computational thinking as well as knowledge of how computers and other digital devices operate.

The Diploma Programme computer science course is engaging, accessible, inspiring and rigorous. It has the following characteristics.

- draws on a wide spectrum of knowledge
- enables and empowers innovation, exploration and the acquisition of further knowledge
- interacts with and influences cultures, society and how individuals and societies behave
- raises ethical issues
- is underpinned by computational thinking.

Computational thinking involves the ability to:

- think procedurally, logically, concurrently, abstractly, recursively and think ahead
- utilize an experimental and inquiry-based approach to problem-solving
- develop algorithms and express them clearly
- appreciate how theoretical and practical limitations affect the extent to which problems can be solved computationally.

During the course the student will develop computational solutions. This will involve the ability to:

- identify a problem or unanswered question
- design, prototype and test a proposed solution
- liaise with clients to evaluate the success of the proposed solution and make recommendations for future developments.

Computer science has links with subjects outside of group 4, notably information technology in a global society (ITGS), but it should be noted that there are clear differences between the subjects.

*Excerpt from *Diploma Programme Computer Science Guide*. Cardiff, Wales: International Baccalaureate, Jan. 2012. PDF.

Nature of DP Design Technology

Diploma Programme design technology aims to develop internationally minded people whose enhanced understanding of design and the technological world can facilitate our shared guardianship of the planet and create a better world.

It focuses on analysis, design development, synthesis and evaluation. The creative tension between theory and practice is what characterizes design technology within the Diploma Programme sciences group.

Inquiry and problem-solving are at the heart of the subject. Diploma Programme design technology requires the use of the design cycle as a tool, which provides the methodology used to structure the inquiry and analysis of problems, the development of feasible solutions, and the testing and evaluation of the solution. In Diploma Programme design technology, a solution can be defined as a model, prototype, product or system that students have developed independently.

Diploma Programme design technology achieves a high level of design literacy by enabling students to develop critical-thinking and design skills, which they can apply in a practical context. While designing may take various forms, it will involve the selective application of knowledge within an ethical framework.

A well-planned design programme enables students to develop not only practical skills but also strategies for creative and critical thinking.

*Excerpt from *Diploma Programme Design Technology Guide*. Cardiff, Wales: International Baccalaureate, Mar. 2014. PD

CTE/Tech Instruction in Uplift Classrooms

The following table describes the four components of the vision for CTE/Tech course in terms of alignment to IB objectives and prioritized CTE/Tech TEKS. The connections listed aid scholars in the development of the skills involved with career and college readiness in a variety of contexts.

Vision Component	Connection to IB Objectives and Prioritized TEKS
A. Think Develop problem solving strategies, research skills, and the ability to interpret results	*MYP Design Objectives A & B* • 3.A – create a research plan to guide inquiry • 4.C – collect and analyze data to identify solutions and make informed decisions
B. Know Develop structure of knowledge, the value of career related knowledge and willingness to expend effort to get it	*MYP Design Objectives C & D* • 4.F – transfer current knowledge to the learning of newly encountered technologies • 6.H – discuss how changes in technology throughout history have impacted various areas of study
C. Act Develop sense of ownership of learning, and learning techniques such as time management, note taking, memorizing, strategic reading, and collaborative learning.	*MYP Design Objectives A & C* • 2.C – read and discuss examples of technical writing • 4.B – plan and manage activities to develop a solution, design a computer program, or complete a project

D. Go Develop post secondary aspirations, career awareness, role and identity, self-advocacy, and growth mindsets.	*MYP Design Objectives B & D* • 6.I – discuss the relevance of technology as it applies to college and career readiness, life-long learning, and daily living • 4.D – use multiple processes and diverse perspectives to explore alternative solutions

Non-Negotiables for a CTE/Tech Classroom

The following IB and instructional components should be observed in all CTE/Tech classrooms. These non-negotiables support the implementation of the IB vision.

All CTE/Tech Classrooms

A. Think: Teachers will employ reading of and written reflection on rigorous and relevant content aligned material and the use of content-area literacy strategies within each lesson cycle. Scholars should be observed applying research skills to projects on emerging technologies or content-specific topics on a daily basis.

B. Know: Learning experiences will provide the opportunity for scholars to give and receive feedback, reflect on learning, and make connections to real-world scenarios. Feedback is non-evaluative, specific, timely, and related to the learning goals, and provides opportunities for the scholar to revise and improve work products and deepen understandings. Reflection on learning can be written or oral and should demonstrate understanding of learning objectives and other's viewpoints.

C. Act: Teachers will include scholar discussions in each lesson and group work wherever the opportunity presents itself. Scholars must use academic vocabulary in written and oral communication and manage time effectively in order to solve problems and complete tasks.

D. Go: Daily lessons must scaffold learning of technical skills which enable scholars to succeed in college and career. Scholars should practice appropriate formats for contacting individuals and industry professionals; master use of content-area software and hardware; learn about colleges and careers related to scholar interests, and develop abilities through dedication and hard work.

MYP Design Classrooms

- Teachers must use the IB Design Cycle to structure projects throughout the year.
- Scholars must work towards meeting the aims and objectives of MYP Design through design challenges (years 1-3) or design problems (years 4-5).
- Scholars must complete a minimum of one MYP Project graded with the MYP Design Rubric each semester which would include the use of a design/process journal.

DP Film (SL) Classrooms

- Teachers must use the Internal Assessment Criteria, found within the IB Film Guide, to structure scholar's film portfolio.
- Scholars must work towards meeting the aims and objectives of DP Film for internal and external assessments.
- Scholars must complete a minimum of one textual analysis from a prescribed film, study of at least two films from more than one country, and undertake a variety of filmmaking exercises in a range of film production roles.

DP Computer Science (SL) Classrooms

- Teachers must use the Internal Assessment Criteria, found within the IB Computer Science guide, to structure projects throughout the years.
- Scholars must work towards meeting the aims and objectives of DP Computer Science for internal and external assessments.
- Scholars must complete a minimum of one paper consisting of two compulsory sections, one paper linked to an option studied, develop a computational solution for a specified target audience, and participate in a Group 4 project.

DP Design Technology (SL) Classrooms

- Teachers must use the Internal Assessment Criteria, found within the IB Design Technology guide, to structure projects throughout the years.
- Scholars must work towards meeting the aims and objectives of DP Design Technology for internal and external assessments.
- Scholars must complete a minimum of one multiple choice paper, one paper consisting of short and extended responses, and identify a problem which develops a solution through an individual design project.

Best Practices

The following are high leverage strategies which support the implementation of the course vision and should be observed at a daily, unit, or semester level for the course. Additional strategies can be found in the "Strategy Bank" along with the Instructional Frameworks.

Vision Component	Best Practice
A. Think	• Use of authentic technical writing wherever possible • Use of technical literacy strategies • Use of problem solving strategies • Proper citations in research and projects • Daily connections to real-world problems
B. Know	• Scholar to scholar & teacher to scholar feedback • Written reflections tied to learning goals • Oral reflections tied to learning goals • Discussions about the impact of technology • Vocabulary development
C. Act	• Situational and presentational dialogue opportunities • Authentic conversations based on scholar interest or existing bank of knowledge • Time management strategies imbedded in projects • Opportunities for making contributions to a team • Guided note taking
D. Go	• Written and oral communication with industry professionals • Inquiry and modeling of technical software and hardware • Use of interest and abilities to develop growth • Scholar demonstrations of technical skills • Connections to careers and college degrees

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II. IB Assessment Overview

The following tables provide information about the internal assessments for the recommended DP course offerings tied to CTE. They lay out the skills required for success in the DP to spark conversations around how to utilize the MYP courses and their assessments purposefully. This process should also be applied at the campus level through the lense of DP external assessments.

Film: Internal Assessment: Film Portfolio (SL - 40%)

Task Description	Skills Required	Considerations for Vertical Alignment
Scholars complete a **film portfolio** which identifies specific intentions for work within **three** film production roles. Portfolio includes three **pages** maximum per film production role with a list of all sources used. Porfolio includes a nine minute maximum **film reel** that captures evidence from exercises, experiments, completed film or excerpts per film production role.	Please note: Each of these criteria will be applied three times—once for each of the film production roles being assessed. **Criterion A: Portfolio Pages** • To what extent does the student evaluate how their research, creative explorations and production work, led by **filmmaker intentions**, have shaped their understanding of the chosen **film production role**? • The portfolio pages and supporting evidence provide a compelling and discerning evaluation of how the student's research, creative explorations and production work, led by their filmmaker intentions, contributed to a highly appropriate understanding of the specific **film production role**. **Criterion B: Film Reel** • To what extent does the student demonstrate skills in the chosen film production role? • The film or collection of film clips demonstrate(s) a sophisticated level of proficiency in the student's production skills, as appropriate to the one **film production role**. Relevant skills, techniques and/or approaches are applied in a highly effective manner.	**Grade 6** • Assigned a design challenge by the teacher to the whole class. • Provides a solution to a design challenge in the form of a presentation with teacher assistance and includes: ○ Reasoning for success of solution ○ Summary of design challenge and it's global context ○ Overall length between 2-4 minutes **Grade 7** • Assigned a design challenge by the teacher to the whole class. • Provides a solution to a design challenge in the form of a presentation with some teacher assistance and includes: ○ Reasoning for success of solution ○ Detailed explanation of design challenge and it's global context ○ Overall length between 3-5 minutes **Grade 8** • Selects a design challenge from a teacher generated list. • Provides a solution to a design challenge in the form of a presentation with limited teacher assistance and includes: ○ Persuassive reasoning for success of solution ○ Insightful and detailed explanation of design challenge and it's global context ○ Overall length between 4-6 minutes **Grade 9** • Creates one visual project, from a teacher generated liste, presented to an audience between three to four minutes. *Individual and group submission of up to 4 people allowed • Accompanies visual project with: ○ Individual rationale for the project of no more than 75 words ○ Individual writen commentary between 800-1,000 words based on the student's personal reflection journal **Grade 10** • Creates one portfolio which captures evidence, written and visual, for specific work within two progect management roles. ○ Pages provide documentary evidence of the scholar's work in each of the two roles and are maximum three pages per role. ○ Visual evidence can include diagrams, floor plans, images, sketches, screen-grabs, or other as teacher approved. **Grade 11/12** • Creates one film portfolio which captures evidence, written and filmed, for specific work within three film production roles ○ Pages provide documentary evidence of the scholar's work in each of the three roles and are balanced between written work and visual evidence. ○ Film reel is submitted as one video file with three chapters at a maximum of three minutes each. Chapter 1 and 2 contain black slate, 1-6 clips of evidence from two different roles. Chapter 3 contains a black slate and one completed film from a third role.

Computer Science: Internal Assessment: Solution (SL - 30%)

Task Description	Skills Required	Considerations for Vertical Alignment

Scholars develop a **solution** for a specified client to a specified problem or an unanswered question.
 	
Solution includes **development of a product** that is fully functional, shown as a video, and accessible to its complete internal structure.
 	
Solution also includes a **documentation folder** containing points of information, scanned diagrams or images of the design process, and a series of extended writing representations.
	Criterion A: Planning
	• The success criteria identified in criterion A will be used in criterion D to evaluate the effectiveness of the product.
	  ○ An appropriate scenario for investigation for an identified client, providing evidence of consultation, is described and includes a range of appropriate criteria for evaluating the success of the product.
	
	Criterion B: Solution Overview
	• The student must provide a record of tasks and a design overview that includes an outline test plan.
	• The Record of tasks form must be used.
	• The record of tasks and design overview must refer to the product proposed in criterion A.
	
	Criterion C: Development
	• The student must identify techniques used in developing the product.
	• The student must explain the techniques, with screenshots, that were used to develop the product identified in criterion A, explaining why they have been used and why they are adequate for the task.
	
	Criterion D: Functionality and Extensibility of Product
	• This criterion assesses the extent to which the product:
	  ○ functions, as evidenced in the video
	  ○ can be expanded and modified by future users as evidenced in the design and development documentation.
	
	Criterion E: Evaluation
	• The student must evaluate the effectiveness of the product based on feedback from the client/adviser. This must include direct references to the success criteria identified in criterion A.
	• The student must recommend proposals for the future improvement of the product.
		Grade 6
		• Assigned a design challenge by the teacher to the whole class.
		• Provides a solution to a design challenge in the form of a presentation with teacher assistance and includes:
		  ○ Reasoning for success of solution
		  ○ Summary of design challenge and it's global context
		  ○ Overall length between 2-4 minutes
		
		Grade 7
		• Assigned a design challenge by the teacher to the whole class.
		• Provides a solution to a design challenge in the form of a presentation with some teacher assistance and includes:
		  ○ Reasoning for success of solution
		  ○ Detailed explanation of design challenge and it's global context
		  ○ Overall length between 3-5 minutes
		
		Grade 8
		• Selects a design challenge from a teacher generated list.
		• Provides a solution to a design challenge in the form of a presentation with limited teacher assistance and includes:
		  ○ Persuasive reasoning for success of solution
		  ○ Insightful and detailed explanation of design challenge and it's global context
		  ○ Overall length between 4-6 minutes
		
		Grade 9
		• Selects a topic from a teacher generated list and explains the reason for their choice.
		• Presents independent study in the form of a written dossier composed of the following three items:
		  ○ Writes a coherent 7-8 page paper that clearly indicates a problem and solution for a specified audience.
		  ○ Compiles an annotated list of sources with relevance to the study.
		
		Grade 10
		• Create a fully functioning solution for a specified client to a specified problem. The solution includes:
		  ○ Detailed description of specified problem
		  ○ Brief reasoned rationale for the proposed solution
		  ○ Evidence of the design process
		  ○ 3-5 minute video demonstrating the functioning solution.
		
		Grade 11/12
		• Creates a fully functioning solution (software program) for a specified client to a specified problem or an unanswered question that is the subset of a solution. The solution includes:
		  ○ A cover page written in HTML format
		  ○ A fully functioning product that provides allows a moderator to access, if possible, its complete internal structure.
		  ○ Documentation, a zip file, organized in the documentation folder of the program which includes:
		  ○ Description of the scenario the solution addresses
		  ○ Rationale for the proposed product
		  ○ List of success criteria for product
		  ○ Record of tasks
		  ○ Design overview (i.e. screenshots, flowcharts, etc.)
		  ○ Detailed description about developing the product with screenshot evidence
		  ○ 2-7 minute video demonstrating the functioning product

Design Technology: Internal Assessment: Design Project (SL - 40%)

Task Description	Skills Required	Considerations for Vertical Alignment
Scholars develop an **individual** design project presented in a design journal of approximately **34 pages.**	**Criterion A: Analysis of a design opportunity** • Scholars will describe a problem which leads to a design opportunity; investigate the problem to develop a design brief; and develop marketing and design specifications. **Criterion B: Conceptual design** • Scholars will use concept modelling to develop ideas to meet appropriate specifications, which explore solutions to the problem and justify the most appropriate idea for detailed development. **Criterion C: Development of a detailed design** • Scholars will produce a detailed design proposal and then sequence the manufacturing process in enough detail for a third party to be able to follow to create a prototype. **Criterion D: Testing and evaluation** • Scholars will evaluate the success of the solution against the specifications and then suggest how the solution can be improved.	**Grade 6** • Assigned a design challenge by the teacher to the whole class. • Provides a solution to a design challenge in the form of a presentation with teacher assistance and includes: ○ Reasoning for success of solution ○ Summary of design challenge and it's global context ○ Overall length between 2-4 minutes **Grade 7** • Assigned a design challenge by the teacher to the whole class. • Provides a solution to a design challenge in the form of a presentation with some teacher assistance and includes: ○ Reasoning for success of solution ○ Detailed explanation of design challenge and it's global context ○ Overall length between 3-5 minutes **Grade 8** • Selects a design challenge from a teacher generated list. • Provides a solution to a design challenge in the form of a presentation with limited teacher assistance and includes: ○ Persuasive reasoning for success of solution ○ Insightful and detailed explanation of design challenge and it's global context ○ Overall length between 4-6 minutes **Grade 9** • Selects a topic from a teacher generated list and explains the reason for their choice. • Presents independent study in the form of a written dossier composed of the following three items: ○ Writes a coherent 7-8 page paper that clearly indicates a problem and solution for a specified audience. ○ Compiles an annotated list of sources with relevance to the study. **Grade 10** • Presents the analysis of a real-life design opportunity, conceptual designs of a product, detailed design brief, and evaluation of a solution in a dossier of approximately 15-20 pages which includes: ○ A detailed design brief and analysis of existing products, ○ Development of a range of feasible design ideas with detailed planning drawings/diagrams, ○ construction of logical plan and evidence of creating the solution ○ 3-4 pages reserved for an evaluation of the solution and suggestions for improvement with evidence. **Grade 11/12** • Investigates one real-life problem and design opportunity to develop a product for a specified client, which leads to a solution. • Presents the analysis of the design opportunity, conceptual designs of a product, detailed design brief, and evaluation of the solution in a dossier of approximately 34 pages* which includes: ○ 7 pages reserved for a detailed analysis of a design opportunity, ○ 11 pages reserved for developing a conceptual design, ○ 9 pages reserved for a detailed design brief, and ○ 7 pages reserved for an evaluation of the solution and suggestions for improvement with evidence.

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III. Instructional Frameworks

Instructional Frameworks outline the key components that should be included in any 5-step, Inquiry-based, or Self-paced lesson and the approximate times to be spent on each section of the lesson. They suggest high-leverage strategies to implement each component in the CTE/Tech classroom. Instructional Frameworks should be used as the skeleton for lesson planning.

Five Step Lesson

Purpose	The following must be present for a successful Five Step Lesson: • Teacher selects a new skill, new content, or scholar misconception(s) then designs a gradual release experience for scholars where each section of the lesson is aligned; • Teacher introduces the lesson in a way that allows scholars to understand the importance of the lesson and how it fits with previous learning; • Teacher creates a gradual release experience for scholars where the cognitive work load shifts from the teacher to scholar so scholars can practice; and • Scholars demonstrate mastery independently and summarize their learning by the end of the lesson.				
Key Components	**Opening:** Teacher introduces the lesson and engages scholars in the learning, which includes a Do Now and Hook. **Introduction to New Material (INM)**: Teacher introduces new skill/content/misconception(s) by providing direct instruction through a model. **Guided Practice (GP):** Teacher guides scholars through an aligned practice activity where the teacher starts to shift work load to scholars usually by working in pairs or small groups. **Independent Practice (IP):** Scholars complete an independent assignment aligned to the model and Guided Practice that includes a way for the teacher to assess scholar mastery. **Closing:** Teacher facilitates a closure activity to have scholars briefly demonstrate their learning.				
Time Stamps	*Opening*	*INM*	*GP*	*IP*	*Closing*
	<15 min	10-15 min	30-40 min	15-20 min	<10 min
	Teacher Actions		**Scholar Actions**		**Strategies**
Opening	• Clarify the significance of today's learning and articulate how it fits into previous learning • Make connections to the unit's broader themes • Build investment, activate prior knowledge, and create scholar excitement about the learning by including a strategic Do Now and compelling Hook		• Make connections to previous lessons or previous learning • Take an active role in the opening by interacting with the teacher and/or other scholars		• See, Think, Wonder, Doubt • Situational Dialogue
INM	• Prepare for the teacher model by creating exemplar scholar responses then annotating examples with process thinking • Provide a clear model of the skill that scholars will need to demonstrate including a think aloud where the teacher describes the process he/she goes through to complete the skill-add a connection to the content • Provide multiple examples as needed to model the skill for scholars • Ask questions and execute Checks for Understanding throughout the model to ensure that scholars are engaging in the lesson		• Take notes including capturing the teacher's model • Ask questions to ensure deeper understanding of the model • Participate in questioning and Checks for Understanding to demonstrate engagement in the lesson		• Online Tutorials • Interactive Demonstration • Frayer Model

GP	• Prepare guided practice examples by completing exemplar scholar responses and strategically grouping scholars • Monitor progress by collecting data on scholar thinking, potential misconceptions, and extension opportunities • Revisit whole group instruction as needed to clarify misconceptions	• Use learning from the Introduction to New Material to complete a similar problem/skill/task • Collaborate with other scholars to complete an aligned problem/skill • Reflect on/Revise their thinking based on feedback from the teacher or other scholars	• Situational Dialogue • Learning Complex Software/Hardware • Productive Struggle
IP	• Prepare for independent practice by completing exemplar scholar responses and ensuring that scholars complete this part of the lesson independently • Circulate the classroom to provide additional clarification to scholars as needed • Track scholars that are struggling to master the lesson and pulls a small group for intervention if needed	• Apply understanding from the introduction to new material and guided practice to complete an aligned independent activity • Communicate their thinking when prompted and explain how they got their answer •	• Journaling • Conference
Closing	• Use a closure activity to guide scholars to demonstrate their learning individually or as a group • Solidify the key takeaways of the lesson-reinforces key takeaways	• Synthesize other scholars' learning and use it to strengthen or refine their own learning • Capture key takeaways and critical learning from the lesson in writing using their own words • Clarify the significance of today's learning and articulate how it fits into previous learning • Make connections to the unit's broader themes	• Journaling • Talk Through

Investigation Lesson

Purpose	The following must be present for a successful Investigation Lesson: • Teachers facilitate learning while scholars drive the lesson through exploration and discussion; • Scholars have sufficient, relevant background knowledge or previous learning that supports the content/skill/concept to be explored; • New learning presents opportunities for scholars to discover authentic connections or patterns through critical thinking; • Tasks are designed in such a manner that allow scholars to dig more deeply into an inquiry rather than cover a wide array of information; and • Investigation Lessons lead to a clear desired outcomes.				
Key Components	**Framing the Inquiry:** Teachers build strong investment in the day's lesson, connect the lesson to broader learning, share the inquiry with scholars, and activate any background knowledge that is needed. **Scholar Investigation:** Scholars engage in activities or experiences in order to analyze the inquiry and develop conjectures, usually in small groups. **Discussion and Synthesis:** Scholars discuss their conjectures as a whole group to construct new or deeper learning. This component concludes with an explicit summary of the desired takeaways from the inquiry. **Application and Verification:** Scholars independently apply their learning to new tasks and verify the learning is valid across situations.				
Time Stamps	*Do Now/Skill Drill*	*Framing the Inquiry*	*Scholar Investigation*	*Discussion and Synthesis*	*Application and Verification*
	<5 min	5-15 min	30-40 min	10-20 min	15-20 min

	Teacher Actions	Scholar Actions	Strategies
Framing the Inquiry	• Clarify the significance of today's learning and articulate how it fits into previous learning • Make connections to the unit's broader themes • Build investment, activate prior knowledge, and create scholar excitement about the learning by including a compelling hook • Share the inquiry that scholars will explore and provide clear direction to facilitate scholar thinking while pre-assessing prior knowledge	• Take notes and engage in discussion • Make connections to previous lessons or previous learning • Determine a system for how they will organize information during the investigation • Interpret the inquiry including identifying what the inquiry is asking them to solve	• Annotation • See, Think, Wonder, Doubt
Scholar Investigation	• Circulate the classroom to check in with groups by providing clarity as needed, asking rigorous, pre-planned CFUs, and providing feedback • Monitor progress by collecting data on scholar thinking, potential misconceptions, and extension opportunities • Identify groups for participation in discussion based on a variety of perspectives • Maintain proper pacing so all groups can complete the inquiry	• Ask and answer questions of other scholars • Pose potential solutions and provide rationale for their thinking • Record their thinking and multiple conjectures to the inquiry • Reflect on and/or revise their thinking based on feedback from the teacher or other scholars	• Productive Struggle • Learning Complex Software/Hardware • Peer Feedback
Discussion and Synthesis	• Reinforce and/or require habits of discussion • Ensure strategic participation and deepen thinking through rigorous questioning based on data collected during the scholar investigation • Summarize discussion to solidify the key takeaways of the lesson	• Engage in strong discussion by projecting their voices, tracking the speaker, providing evidence for their arguments, and asking/answering questions • Synthesize other scholars' learning and use it to strengthen or refine their own learning • Capture key takeaways and critical learning from the lesson in writing using their own words	• Socratic Seminar • Situational Dialogue • Presentations
Application and Verification	• Provide opportunities for scholars to practice mastery of the takeaways from the lesson • Circulate the classroom to provide additional support to select scholars	• Apply understandings from the investigation to new situations and clarify individual misconceptions	• Learning Complex Software/Hardware • Journaling

Self Paced Lesson

Purpose	The following must be present for a successful Self-paced Learning Lesson: • Teachers facilitate learning while scholars drive the lesson through learner response; • Scholars are provided with the opportunity to review, remediate or accelerate the learning without having to wait on the teacher or the rest of the class; • New learning presents opportunities for scholars to own and personalize their learning; • Tasks are designed in such a manner that allow scholars to progress in their work; and • Performance tasks lead to clear desired outcomes.				
Key Components	**Framing Outcomes:** Connect scholars to the content, activate any background knowledge that is needed, and introduce performance task outcomes. **Practice:** Scholars engage in activities or experiences in order to progress knowledge and specified skill towards an end goal/product. **Checking:** Scholars check their work through predetermined procedure; answer key, teacher graded, peer checking, or a combination of these. **Iterate:** Scholars are provided the opportunity to remediate or accelerate their learning; this takes place **Application and Verification:** Scholars apply their learning to new tasks and verify the learning is valid across situations.				
Time Stamps	*Framing Outcomes*	*Practice*	*Checking*	*Iterate*	*Application and Verification*
	<10 min	30-40 min	<5 min	20-30 min	10-15 min
	Teacher Actions		**Scholar Actions**		**Strategies**
Framing Outcomes	• Clarify the significance of today's performance task and articulate how it fits into previous learning • Make connections to the unit's broader themes • Builds investment/activates prior knowledge and scholar excitement about the learning by including a real-world connection • Introduces the performance task outcomes and ensure scholars have a way to track progress towards them.		• Take notes and engage in discussion • Make connections to previous lessons or previous learning • Determine a system for how they will track progress towards performance task. • Interpret the performance tasks including identifying tools and resources needed to complete them.		• Journaling • Annotation
Practice	• Provides scholars with materials and resources needed to practice the skill being assessed • Circulates the classroom to check in with groups by providing clarity as needed, asking rigorous, pre-planned CFUs, providing feedback • Monitors progress by collecting data on scholar thinking, potential misconceptions, and extension opportunities • Identify groups for remediation and/or acceleration		• Ask and answer questions of other scholars • Pose potential solutions and provide rationale for their thinking • Reflect on/Revise their thinking based on feedback from the teacher or other scholars • Actively explore their environment or manipulate materials to build their own understanding • Follow rubrics and/or performance task objectives		• Online Tutorials • Learning Complex Software/Hardware • Write, Discuss, Rewrite
Checking	• Ensures strategic check points are provided to determine scholar progression towards performance task outcomes • Provide scholars with multiple opportunities to check their work by using one of the following:		• Complete check points to determine if review, remediation, or acceleration can take place • Follows predetermined checking procedure(s) • Move themselves into iteration phase based on result of checking		• Conferences • Talk Through

	○ answer keys available for scholars to check themselves; or ○ teacher check-ins to grade work or assess skill level achieved; or ○ peer checking based on provided rubrics; or ○ a combination of these		
Iterate	• Sets groups for remediation and/or acceleration • Provides scholars with materials and resources needed to review skills or accelerate learning • Works with remediation group to deepens thinking through rigorous questioning based on data collected during the practice	• Engage in review of skill(s) needed to be successful in application and verification phase • Synthesize other scholars' learning and use it to strengthen or refine their own learning • Accelerate their own learning by applying knowledge to a new skill or activity	• Reciprocal Teaching • Online Tutorials • Interactive Demonstration
Application and Verification	• Provides opportunities for scholars to demonstrate mastery of the takeaways from the lesson • Circulates the classroom to provide additional support to select scholars	• Apply understandings from the practice and iterate phases to new situations and clarify individual misconceptions	• Learning Complex Software/Hardware • Journaling

Strategy Bank

The following are recommended high-leverage, instructional strategies that are aligned to the Uplift CTE/Tech Vision and Best Practices. Although they are grouped by vision component, many strategies support multiple components of the vision. These strategies can be implemented within every class period, as suggested by the Instructional Frameworks, above.

Think
Think Aloud
With this strategy, teachers verbalize their thought processes while reading a selection/working through a problem. Their verbalizations include describing things they're doing as they read or problem solve to monitor their steps to scholars. The purpose of the **think-aloud** strategy is to model for scholars how to apply learned skills so that they can do the same individually. http://www.teachhub.com/teaching-strategies-think-alouds
Write Aloud
Young and/or poor writers need to observe experienced writers at work in ways that will actually help them to write more effectively themselves. **Write-aloud** lessons, known as modeled writing, will help you to provide authentic explanations for your students, demonstrating how writers actually go about constructing various kinds of texts. http://www.readwritethink.org/professional-development/strategy-guides/write-alouds-30687.html
See, Think, Wonder, Doubt
Teachers post a real-world image, video, or scenario on and ask scholars what they see, what it makes them think, and what they wonder. Alternatively, scholars could share what they doubt based on the prompt. The **See, Think, Wonder, Doubt** routine encourages scholars to make careful observations and thoughtful interpretations as to stimulate curiosity and sets the stage for inquiry.
Citation
Teacher and scholar led learning experiences about the abundance of online materials and how to use them. Each learning experience will raise questions about copyright, licenses, and creator's rights. http://www.teachinctrl.org/lessons/whatsmineisntyours.php http://www.edudemic.com/6-tools-to-help-students-build-bibliographies/

Know

Journaling

Journaling serves a variety of purposes, including activating schema, promoting reflection, recording notes and observations, documenting an ongoing learning process, or responding to text. Given the variety of purposes, the format and structure of a journal will vary according to subject and intention. Common types of journals include process journals, dialectical journals, or interactive notebooks.

Conferences

As scholars are working independently on a process piece, teacher holds short, individual **conferences** with scholars and provides bite-sized, immediate feedback.
http://www.readingrockets.org/strategies/writing_conferences

Reciprocal Teaching

Reciprocal teaching refers to an instructional activity in which students become the teacher in small group sessions. Teachers model, then help students learn to guide group discussions using four strategies: summarizing, question generating, clarifying, and predicting. Once students have learned the strategies, they take turns assuming the role of teacher in leading a dialogue about what has been read/taught.

http://www.readingrockets.org/strategies/reciprocal_teaching

Socratic Seminar

The **Socratic Seminar** is a formal discussion, based on a text, in which the leader asks open-ended questions. Within the context of the discussion, students listen closely to the comments of others, thinking critically for themselves, and articulate their own thoughts and their responses to the thoughts of others. They learn to work cooperatively and to question intelligently and civilly.

Eductional Leadership, "Socratic Seminars: Engaging Students in Intellectual Discourse" (http://www.ascd.org/publications/educational-leadership/sept95/vol53/num01/Socratic-Seminars@-Engaging-Students-in-Intellectual-Discourse.aspx)

Frayer Model

The **Frayer Model** is a strategy that uses a graphic organizer for vocabulary building. This technique requires scholars to (1) define the target vocabulary words or concepts, and (2) apply this information by generating examples and non-examples. This information is placed on a chart that is divided into four sections to provide a visual representation for scholars. This instructional strategy promotes critical thinking and helps scholars identify and understand unfamiliar vocabulary.

References: *Building Vocabulary and Conceptual Knowledge Using the Frayer Model*, The IRIS Center, Vanderbilt Peabody College (https://iris.peabody.vanderbilt.edu/module/sec-rdng/cresource/q2/p07/). Summarization in Any Subject, Rick Wormeli (http://www.ascd.org/publications/books/104014/chapters/The-Frayer-Model.aspx). Classroom Instruction That Works, Marzano, Pickering, and Polluck

Act

Peer Feedback

Scholars are split into two groups, group A and group B. Scholars from group A will give verbal feedback to peers from their group and written feedback to peers in group B. In the same way, Scholars in group B will give verbal feedback to peers from their group and written feedback to peers in group A. For example, John is from group A and has written a paper that needs feedback. The paper is presented to the class for review. In this situation, scholars from group A are responsible for giving verbal feedback while scholars from group B are responsible for giving written feedback. This ensures that John will receive multiple points of feedback to use on improving his writing.

Write, Discuss, Rewrite

Write, Discuss, Rewrite is similar to **Think-Pair-Share or Think-Write-Pair-Share** in that it promotes peer interaction and accountable talk to facilitate learning. However, it is more rigorous in that it requires scholars to formulate their thinking in writing before oral interaction and synthesize learning after the peer interaction. Specifically, asking scholars to rewrite their responses after the discussion forces them to listen and reflect more closely to their peers' responses in order to revise and extend their own thinking.
https://www.nasa.gov/sites/default/files/files/4-TWPS_Template.pdf

Situational Dialogue

To build interpersonal communication skills, scholars have opportunities to **produce communication** in real-world scenarios. Teachers prepare conversation starters that relate to the content, build scholar speaking skills with their peers and use content vocabulary in context.
http://cte.illinois.edu/resources/pdf/CTE Handbook.pdf

Interactive Demonstrations

Highly orchestrated **inquiries** (experiments or procedural thought models) conducted by the teacher. These typically have one of two desired outcomes. Outcome 1: a discrepant event, or surprising result that generates curiosity and questioning from the scholars. Outcome 2: scholars attain a better understanding of how to now do something. The key word here is *interactive*. Teachers plan what they will do, what part of the demonstration scholars will do and how they will do it, what higher level questions will be discussed or considered during the demonstration and when they will be considered.

Annotation

The act of notating a text in a systematic way in response to a prompt or previously set purpose for reading. The key to **annotating** is that is must be purposeful - i.e. it must meet a specific need rather than being generic markings that routinely identify when scholars are making an inference, uncover a main idea, etc. Overtime, scholars should develop/adapt a system for marking the text that is individual to their own personal method of thinking. As such, one may expect various scholar annotations to be similar, but not universal. Lastly, college ready, purposeful annotation, is simple and not "cute." Symbols should be readily noted rather than intricately drawn.

"How and Why to Annotate a Book, AP Central
http://apcentral.collegeboard.com/apc/public/courses/teachers_corner/197454.html

Go

Presentations

To build **presentational** communication skills, scholars have opportunities to collect information and present information, findings, and evidence in a style that is appropriate to task, purpose, and audience.
https://www.skillsyouneed.com/presentation-skills.html

Learning Complex Software/Hardware

To build and remediate foundational **technical skills**, teachers provide context within real-world examples, set aside plenty of time, focus on core tasks, and make training hands-on. Each learner comes with a different level of experience with technology, and some learners require more attention than others. Making sure each participant walks away with everything he or she needs can sometimes feel like a juggling act.
http://blog.servicerocket.com/adoption/blog/2015/06/4-ways-to-make-teaching-complex-software-easier

Online Tutorial

To ensure that **technical skills** are being taught in context, teachers utilize rigorous online tools and tutorials to enhance scholar engagement and mastery. A focus in online learning requires the scholar to be persistent and have effective communication and time-management skills.
https://www.careerwise.mnscu.edu/education/successonline.html

Talk Through

When scholars appear to have successfully learned a skill, set up activities for them to complete and ask scholar to **'talk' through** the activity (i.e. announce each step they are taking, describe their problem-solving aloud, describe any road-blocks that they run into and tell how they will go about solving the problem, etc.)
http://www.interventioncentral.org/academic-interventions/general-academic/teacher-strategies-promote-learning

Productive Struggle

Involves formatting a learning experience in such as way that scholars individually **struggle** with a presented problem, share their solution methods in pairs, the come together whole group to evaluate the different methods used to solve it.
https://www.edutopia.org/blog/harnessing-power-of-productive-struggle-ellie-cowen

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IV. Subject Specific Resources

The following sections offer resources and additional information for an exemplar CTE/Tech classroom.

Computational Thinking

View the chart below to gain a better understanding of the level of computational thinking scholars can achieve based on their grade level.

CT Vocabulary and Progression Chart

	Definition	Grades PK to 2	Grades 3 to 5	Grades 6 to 8	Grades 9 to 12
Data Collection	The process of gathering appropriate information	Conduct an experiment to find the fastest toy car down an incline and record the order of cars across the finish line in a chart.	Review examples of writing to identify strategies for writing an essay.	Design survey questions to gather appropriate information to answer questions (e.g., asking fellow students if they were absent from school in the past month and whether they were suffering from the flu).	Students develop a survey and collect both qualitative and quantitative data to answer the question: "Has global warming changed the quality of life?"
Data Analysis	Making sense of data, finding patterns, and drawing conclusions	Make generalizations about the order of finishing a toy car race based on the characteristics of the car with a focus on weight. Test conclusions by adding weight to cars to change results.	Categorize strong and weak examples of writing samples to develop a rubric.	Produce and evaluate charts from data generated by a digital probe and describe trends, patterns, variations, and/or outliers represented in the chart.	Use appropriate statistical methods that will best test the hypothesis: "Global warming has not changed the quality of life."
Data Representation	Depicting and organizing data in appropriate graphs, charts, words, or images	Create a chart or a line drawing that shows how the speed of a toy car changes when its weight is changed.	Match each writing sample to the rubric and create a chart showing which example best fits in each category of the rubric.	Plot data using different charting formats and select the most effective visual representation strategy.	Groups of students represent the same data in different ways based on a position relating to the question: "Has global warming changed the quality of life?" Different representations may result in varying conclusions.
Problem Decomposition	Breaking down tasks into smaller, manageable parts	Create directions to a location in the school by breaking the directions down into smaller geographical zones. Join the sections of directions together into a whole.	Develop a plan to make the school "green." Separate strategies such as recycling paper and cans, reducing use of electricity, and composting food waste.	In planning the publication of a monthly newsletter, identify roles, responsibilities, timeline, and resources needed to complete the project.	Consider the large-scale problem: "What does it take to become a rock star?" Break it into smaller parts. Discuss what variables are within a student's control and what variables are determined by outside factors.
Abstraction	Reducing complexity to define main idea	With many sizes and colors of three-sided shapes, the abstract is a triangle.	Hear a story, reflect on main items, and determine an appropriate title.	After studying a period in history, identify symbols, themes, events, key people, and values that are most representative of the time period (e.g., coat of arms).	Choose a period in politics that was most like the current one by analyzing the essential characteristics of the current period.

CT Vocabulary and Progression Chart

	Definition	Grades PK to 2	Grades 3 to 5	Grades 6 to 8	Grades 9 to 12
Algorithms & Procedures	Series of ordered steps taken to solve a problem or achieve some end.	Create a set of directions from the school to the major landmarks in the neighborhood.	Design a board game and write instructions to play. Test instructions on peers trying to play the game. Refine instructions with feedback from peers who played the game.	Program a robot to find its way out of a maze such that given any maze, the robot could exit successfully within a specified time period.	Discuss the decision-making process for choosing a college, then create an algorithm that describes that process. The algorithm will be able to handle unknown variables, such as where friends are attending, availability of financial aid, and admission success, to come to an unambiguous decision.
Automation	Having computers or machines do repetitive or tedious tasks.	Converse with a classroom in another state or country to learn about their culture using Internet-based tools to replace writing letters.	Investigate what automation is through real-world examples, like barcodes, teller machines, and library bar codes.	Program a sensor to collect pollution data (set timers with probes) and then use a computer program to sort the readings from maximum to minimum CO_2 levels.	Debate the merits of learning skills and information that are rarely necessary today because of automation. These skills might include long division, deriving square roots, spelling, statistical formulas, memorizing historic dates, etc.
Simulation	Representation or model of a process. Simulation also involves running experiments using models.	After a set of directions has been created, act out the steps to be sure they are correct.	Create an animation to demonstrate the understanding of a process.	Use a model of a simple ecosystem to conduct experiments that answer what happens to the ecosystem if some percentage of the producers die. The user controls the percentage that dies off.	Create a spreadsheet to simulate the "Birthday Problem" (How many people must be in a room for there to be at least a 50% chance that at least two have the same birthday?). Use the same model to answer the question for three people having the same birthday.
Parallelization	Organize resources to simultaneously carry out tasks to reach a common goal.	Based on a set of criteria, break the class into two groups. Have one group read aloud while the other group provides humming background music. The goal is reached, but the whole is better than the individual parts.	Teachers facilitate in planning team project timelines, roles, and assignments and working together to complete components (how do we break up the tasks, what tasks have to be done sequentially and others simultaneously, check ins, meeting deadlines?).	Student teams plan production of a video, including script, props, and roles of the team in producing the video. Identify tasks that will be carried out simultaneously, and milestones where they check in, and plan, and put things together.	Describe the sequence of activities by each of the armies leading to the Battle of Waterloo. Include both physical activities (e.g., recruit troops) and intellectual activities (e.g., pick troop positions).

Four Keys to College and Career Readiness

The goal of college and career readiness requires teachers and leaders to enable all scholars to master core content, develop key cognitive stragies, take ownership of their learning with profieciency in a range of learning strategies, and acquire the knowledge necessary to make a successful transition from secondary to postsecondary education. That's a lot to accomplish, but can be done by building the four key areas of college and career readiness as developed by Dr. David T. Conley.

THINK

Students need to do more than retain or apply information; they have to process and manipulate it, assemble and reassemble it, examine it, question it, look for patterns in it, organize it, and present it. They need intentional patterns of thinking to draw on as they complete work after high school.

Read More

KNOW

Students need strong foundational knowledge in core academic subjects, and they also need to have an understanding of the structure of knowledge (the big ideas and how those ideas frame the study of the subject). However, it is not enough to have students learn high-quality content. They need to understand that success at learning content is a function of effort much more than aptitude.

Read More

ACT

Students need skills and techniques to take ownership and successfully manage their learning in educational and career opportunities after high school. In the absence of these critically important skills, students remain dependent learners who struggle when expected to work independently because they lack the needed tool kits.

Read More

GO

Students preparing for a career or to further their education beyond high school must navigate numerous potential pitfalls if they wish to make a successful transition. They must cope with issues ranging from correctly submitting postsecondary applications to knowing when to seek help or advocate for their best interests.

Read More

"The Four Keys to College and Career Readiness." *EPIC.* N. p., n.d. Web. https://www.epiconline.org/what-we-do/the-four-keys/

Career Clusters and Pathway

Teachers should learn about the 16 Career Clusters and associated Career Pathways aligned to the CTE program. These are designed to streamline secondary and post-secondary CTE programs and associated naming conventions.

The 16 Career Clusters were validated through a national effort managed by the National Association of State Directors of CTE Consortium (NASDCTEc). Defining the Career Clusters:

- A Career Cluster is a grouping of occupations and broad industries based on commonalities.
- Expectations at the Career Cluster level represent the skills and knowledge, both academic and technical, that all students within the Career Cluster should achieve regardless of their pathway.
- Expectations at the pathway level represent the skills and knowledge, both academic and technical, necessary to pursue a full range of career opportunities within a pathway— ranging from entry level to management, including technical and professional career specialties.

Career and Technical Student Organizations

CTSOs	CTE Career Cluster	National Association Website	Texas Website
These CTSOs are related to Uplift CTE Programs and are recommended as part of a co-curricular learning opportunity for scholars. Career and Technical Student Organizations (CTSOs) are CTE organizations recognized by U.S. Dept. of Education and TEA. Scholars are provided with opportunities to practice 21st century skills outside of the classroom like leadership and collaboration. Scholars can choose to take what they are learning in a CTE classroom and compete with other members in their area, State of Texas conferences, or national level competitions.			
Future Business Leadership of America	AV & IT		

		FBLA·ΦBA	Texas State FBLA
Health Occupations Students of America	Health	hosa future health professionals	hosa future health professionals TEXAS
Technology Students Association	STEM	TSA TECHNOLOGY STUDENT ASSOCIATION	
SkillsUSA	AV	SkillsUSA	SkillsUSA TEXAS
First Robotics	STEM	FRC FIRST Robotics Competition	FIRST in Texas
Best Robotics	STEM	BEST	DALLAS BEST Boosting Engineering, Science & Technology

Technology News

Scholars should spend time reading technology related news articles and reflecting on these to build their reading skills. When providing articles for read, it's important to have a holistic approach to ensure scholars are getting the most out it. To do so, teachers should utilize the Before, During, and After template provided below.

EXAMPLE
Grade: 6th
Article Title: How close are we to flying cars?
Summary of Article: Flying cars were originally imagined as a futuristic mode of transportation but that could become a reality in the next 10-15 years. There are a number of companies and organizations that have devoted resources to figuring out how we create vehicles that every day people could fly around instead of driving their cars. Unfortunately these companies are facing a number of challenges around cost, safety, technology and regulation standards.

	Strategy	Teacher Actions	Scholar Actions
Before Reading (Day 1)	Use the word document of the anticipation guide to create a handout for scholars with the following statements: -Flying cars would be easy to make since we already have the technology to make vehicles fly. -The biggest challenge to creating a flying car is the technology needed to make the car easy for the average person to fly. -Companies like Uber are worried about "air taxis" because it could take away business. -The government would need to create a new air traffic control system to monitor flying cars.	-Teacher explains that we will be reading an article about the possibility of flying cars. -Teacher passes out the anticipation guide and gives scholars 5 minutes to complete the before reaching portion. -Teacher puts scholars in groups of 3 and gives them 3 minutes to share their answers with their group and see if they agree with each other. -Teacher takes 2 minutes to share some answers whole group. -Teacher assign the article for homework and has scholars annotate the text as they read.	-Scholars take 5 minutes to silently complete the anticipation guide. -Scholars get into groups of 3 and share their responses by looking for questions where they agree or disagree with their group. Scholars use accountable talk when appropriate. -Scholars are active participants in the whole class discussion. -Scholars take home the article to annotate as they read.
During Reading (Day 2)	Concept Map of the challenges to creating flying cars -Safety -Technology -Cost -Regulation These are the top answers.	-Teacher have scholars complete a turn and talk to summarize the article then write their summary on the back of the article. -Teacher leaders a 2-3 minute discussion about the summary of the article and shares the exemplar summary above with the class. -Teacher models how to use the concept map by filling out the first bubble on safety. -Teacher gives scholars 15 minutes to independently reread the article and complete the concept map.	-Scholars engage in a turn and talk then summarize the article. -Scholars complete the concept map of challenges with flying cars.
After Reading (Day 3)	Frame Routine 1. Identify the topic. Flying Cars 2. Determine the main ideas. Flying cars are a possibility in the future. There are many companies working on flying car. There are a number of safety and technology challenges to flying cars. 3. Develop a "big idea"-If we can overcome a number of challenges, flying cars could be in our near future. 4. Evaluate the information: Facilitate an in class discussion on the following questions, "How would flying cars impact our day to day life?"	-Teachers lead scholars through the Frame Routine. -Scholars record their own answers then the teacher leads the whole class debate. -Note: It would be best if the question at the end related to a portion of the MYP unit.	-Scholars complete the Frame Routine in writing. -Scholars engage in a whole class discussion. -Scholars end the class with writing a 1-2 paragraph response to the big question at the end of class.

Additional CTE/Tech Guidelines

Common Projects	The purpose of common projects is to identify strengths and weaknesses in CTE and Technology project-based learning. Additionally, this will help us to identify areas of instruction for MYP and DP implementation that need to be addressed. Projects should be chunked into manageable pieces so that all required components of the project are completed. Each day should have explicit deliverables and teachers should give feedback that guides a scholar towards a successful overall project. This assures that all necessary skills are being taught or reviewed with scholars leading to more successful project-based learning. Each CTE/Tech course has it's own midterm and final common projects. Please view the Common Projects and/or Scope & Sequence within your respective course on Blackboard for more details.
Team Contract or Agreement	When working on a team project, scholars should complete a Team Contract or Agreement. This assures each team member has equitable work to complete on this project. Team members can use this document to hold each other accountable throughout the project process. Teachers should review this agreement with each team to make sure all aspects of the assigned project have been divided up equally and fully.

CTE Dual Credit	Many of our high school CTE courses qualify for dual credit through DCCCD. In order for scholars to earn college credit, the teacher of record must be qualified and approved by DCCCD. Once approved, scholars will complete their application for entry into the program. Courses approved for dual credit as of Spring 2018 include: • Professional Communication • Project Based Research • Web Technologies • Computer Programming • Advanced Computer Programming • Graphic Design and Illustration • Principles of Arts, AV Technology and Communications • Audio/Video Production • Engineering Design and Presentation
Nepris Industry Connections	Each year, scholars in CTE/Tech courses should spend time exploring connections with professionals in different industries. We want our scholars to focus on industries and careers that require a college education. Teachers should use Nepris to bring professionals into the classroom through industry chats and sessions. This will help scholars to make connections to why they should plan to pursue a post-secondary education following high school. Nepris has been purchased for all CTE/Tech teachers and scholars can sign up for free at www.nepris.com.
AV Software Needed (Aligned to iMacs):	• Microsoft Office • Final Draft • Final Cut Pro • Adobe Creative Cloud Suite – all apps
Information Technologies Software Needed (Aligned to PCs or Laptops):	• Adobe Photoshop CS6 • Adobe Dreamweaver CS6 • GIMP • PHP Server
STEM Software Needed (Aligned to PCs or Laptops)::	• Autodesk Inventor • RoboCell
MS Technology Software Needed:	**6th and 7th Grade – Aligned to Chrome Books** • Office 365 • Google Apps • Code HS (online) **8th Grade – Aligned to PCs or Laptops** • Adobe Photoshop • Code HS (online)
Teaching Keyboarding Skills in Middle School	The purpose of teaching keyboarding skills in middle school is to provide our scholars with the necessary skills for success in high school. In order to make sure scholars learn to type successfully, teachers should find a way to cover keyboard covers so scholars can learn the keys. You can purchase some cheap fabric at a local fabric store or Walmart to cover each scholars' keyboard. Scholars will only improve their typing skills when they focus on learning the keys instead of looking down at the keys. In addition, proper seating position and hand placement is very important. Middle school scholars should strive to meet the following goals: • 6th Grade – 30 WPM with no errors • 7th Grade – 35 WPM with no errors • 8th Grade – 40 WPM with no errors

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V. Independent Study

Additional research and resources for further exploration.

Computational Thinking: A Problem-Solving Tool for Every Classroom

Computational Thinking is simply a problem-solving process that involves designing a solution. In this short 6-page article, teachers and leaders are provided with an explanation of computational thinking and resources for implementation into various disciplines.

- Phillips, Pat. "COMPUTATIONAL THINKING". S.l.: BCS, THE CHARTERED INSTIT, 2017. University of Central Florida. Web. cyber.ist.ucf.edu/cic/doc/teachingResources_CompThinking.pdf.

Google for Education provides some great videos and resources for teachers and leaders who want to explore classroom integration of computational thinking.

- "Google for Education: Computational Thinking". Google. Web. edu.google.com/resources/programs/exploring-computational-thinking.

A Complete Definition of College and Career Readiness

"In many circles, efforts are under way to develop a definition of college and career readiness. This brief contains a definition that is the culmination of 18 years of study and research on this topic."

- Conley, David T., PhD. "A Complete Definition of College and Career Readiness". EPIC. N.p., 23 Aug. 2016. Web. https://www.epiconline.org/ccr-definition

CTE's Role in Adolescent Literacy

"This Issue Brief will explore the key role that CTE programs can play in increasing adolescent literacy engagement and achievement."

- "CTE's Role in Adolescent Literacy". Association for Career and Technical Education, Nov. 2009. Web. www.acteonline.org/WorkArea/DownloadAsset.aspx?id=2102&sa=U&ved=0ahUKEwjenPuW3efaAhVG44MKHfYAC54QFggEMAA&client=internal-uds-cse&cx=002273633718989846617:8iqftuqnfji&usg=AOvVaw1k5rHNWDQv6NXgWeaZaWNV

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