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## **Texas 2017 Proclamation: §130.410 Engineering Design and Presentation I**

**Correlations to the Texas Essential Knowledge  
and Skills (TEKS)**

**Correlations to the English Language Proficiency  
Standards (ELPS)**



*Correlation of*  
**Exploring Drafting, 12e, ©2018**  
to the  
**Texas Essential Knowledge and Skills (TEKS)**  
**Course: §130.410 Engineering Design and Presentation I (MLC 9407)**

The following chart lists the Knowledge and Skills Statements and Student Expectations for the Texas Essential Knowledge and Skills (TEKS) for Engineering Design and Presentation I. For each Student Expectation, the corresponding pages in *Exploring Drafting* are listed.

Student Expectations	Textbook Page(s)
<b>(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:</b>	
(1) (A) demonstrate knowledge of how to dress appropriately, speak politely, and conduct oneself in a manner appropriate for the profession and work site	23–24, 81, 311, 455
(1) (B) cooperate, contribute, and collaborate as a member of a group in an effort to attain agreement and achieve a collective outcome	417
(1) (C) present written and oral communication in a clear, concise, and effective manner, including explaining and justifying actions	13, 57, 81, 204, 247, 455
(1) (D) use time-management skills in prioritizing tasks, following schedules, and tending to goal-relevant activities in a way that optimizes efficiency and results	143
(1) (E) complete a consistent demonstration of punctuality, dependability, reliability, and responsibility in reporting for duty and performing assigned tasks as directed	22–24
<b>(2) The student gains knowledge of and demonstrates the skills necessary for success in the workplace. The student is expected to:</b>	
(2) (A) distinguish the differences between an engineering technician, engineering technologist, and engineer	14, 18
(2) (B) identify employment and career opportunities	14–21, 26
(2) (C) investigate and work toward industry certifications	3, 483
(2) (D) demonstrate the principles of teamwork related to engineering and technology	417
(2) (E) identify and use appropriate work habits	23–24, 143, 311
(2) (F) demonstrate knowledge related to governmental regulations, including health and safety	425, 545

Student Expectations	Textbook Page(s)
(2) (G) discuss ethical issues related to engineering and technology and incorporate proper ethics in submitted projects	23–24, 26, 407, 419–422, 426
(2) (H) demonstrate respect for diversity in the workplace	24, 441
(2) (I) demonstrate appropriate actions and identify consequences relating to discrimination, harassment, and inequality	24, 441, 511
(2) (J) demonstrate effective oral and written communication skills using a variety of software applications and media	18, 146, 197, 204, 274, 499
(2) (K) explore career preparation learning experiences, including job shadowing, mentoring, and apprenticeship training	3, 215
<b>(3) The student participates in team projects in various roles. The student is expected to:</b>	
(3) (A) demonstrate an understanding of and discuss how teams function	215, 417
(3) (B) apply teamwork to solve problems	417
(3) (C) serve as both a team leader and member and demonstrate appropriate attitudes while participating in team projects	21–22, 215, 417
<b>(4) The student develops skills for managing a project. The student is expected to:</b>	
(4) (A) implement project management methodologies, including initiating, planning, executing, monitoring and controlling, and closing a project	35, 423–424, 548
(4) (B) develop a project schedule and complete work according to established criteria	15, 23, 143, 258, 425
(4) (C) participate in the organization and operation of a real or simulated engineering project	423
(4) (D) develop a plan for production of an individual product	423
<b>(5) The student practices safe and proper work habits. The student is expected to:</b>	
(5) (A) master relevant safety tests	76, 545
(5) (B) comply with safety guidelines as described in various manuals, instructions, and regulations	76, 413, 436, 545
(5) (C) identify and classify hazardous materials and wastes according to Occupational Safety and Health Administration (OSHA) regulations	413–415, 545
(5) (D) dispose of hazardous materials and wastes appropriately	414–415

Student Expectations	Textbook Page(s)
(5) (E) perform maintenance on selected tools, equipment, and machines	75–76, 78
(5) (F) handle and store tools and materials correctly	58–75, 77–78, 96, 411–412
(5) (G) describe the results of negligent or improper maintenance	59, 66, 545
<b>(6) The student applies the concepts of sketching and skills associated with computer-aided drafting and design. The student is expected to:</b>	
(6) (A) use single- and multi-view projections	168–169, 216–235, 351–356
(6) (B) use orthographic and pictorial views	216–221, 235, 330–356
(6) (C) use auxiliary views	312–318, 320
(6) (D) use section views	288–297, 300
(6) (E) use advanced construction techniques	167–174, 366–379
(6) (F) prepare and revise annotated multi-dimensional production drawings in computer-aided drafting and design to industry standards	176, 234, 263–268, 274–275, 351–355
(6) (G) demonstrate knowledge of effective file structure and management	147–148, 156–157, 164–165, 179
(6) (H) use advanced dimensioning techniques	169, 176, 274
(6) (I) construct and use basic 3D parametric drawings	167–173, 177
(6) (J) develop and use prototype drawings for presentation	177–179
<b>(7) The student uses engineering design methodologies. The student is expected to:</b>	
(7) (A) demonstrate an understanding of and discuss principles of ideation	35, 423
(7) (B) demonstrate critical thinking, identify the system constraints, and make fact-based decisions	329
(7) (C) use rational thinking to develop or improve a product	423–424
(7) (D) apply decision-making strategies when developing solutions	329
(7) (E) use an engineering notebook to record prototypes, corrections, and/or mistakes in the design process	365
(7) (F) use an engineering notebook and portfolio to record the final design, construction, and manipulation of finished projects	29, 423–424
<b>(8) The student applies concepts of engineering to specific problems. The student is expected to:</b>	
(8) (A) use a variety of technologies to design components	174–176, 437, 507, 537

Student Expectations	Textbook Page(s)
(8) (B) use tools, laboratory equipment, and precision measuring instruments to develop prototypes	71–73, 86–89, 430, 436–437, 560–563
(8) (C) research applications of different types of computer-aided drafting and design software	177, 507, 537, 450
(8) (D) use multiple software applications for concept presentations	354–355, 450, 463
<b>(9) The student designs products using appropriate design processes and techniques. The student is expected to:</b>	
(9) (A) interpret engineering drawings	390–396, 470–471, 503–504, 520–527
(9) (B) identify areas where quality, reliability, and safety can be designed into a product	422, 426
(9) (C) improve a product design to meet a specified need	35, 423
(9) (D) produce engineering drawings to industry standards	82–85, 270–271
(9) (E) describe potential patents and the patenting process	35
<b>(10) The student builds a prototype using the appropriate tools, materials, and techniques. The student is expected to:</b>	
(10) (A) identify and describe the steps needed to produce a prototype	423–424, 532–533
(10) (B) identify and use appropriate tools, equipment, machines, and materials to produce the prototype	418, 436, 560–562
(10) (C) present the prototype using a variety of media	433–436

## English Language Proficiency Standards (ELPS) Correlation for *Exploring Drafting* by Walker, Mathis, and Scribner, ©2018

This following chart identifies some of the content in *Exploring Drafting* that may provide useful support when addressing specific Texas English Language Proficiency Standards (ELPS).

Standard	Page(s)	Specific Location
(1) Cross-curricular second language acquisition/learning strategies. The ELL uses language learning strategies to develop an awareness of his or her own learning processes in all content areas. In order for the ELL to meet grade-level learning expectations across the foundation and enrichment curriculum, all instruction delivered in English must be linguistically accommodated (communicated, sequenced, and scaffolded) commensurate with the student's level of English language proficiency. The student is expected to:		
(1)(A) use prior knowledge and experiences to understand meanings in English	12	Before You Begin
	142	Before You Begin
	180	Communicating about Drafting
	286	Before You Begin
	310	Before You Begin
	510	Before You Begin
(1)(B) monitor oral and written language production and employ self-corrective techniques or other resources	11	Communicating about Drafting
	397	Communicating about Drafting
	565	Communicating about Drafting
(1)(C) use strategic learning techniques such as concept mapping, drawing, memorizing, comparing, contrasting, and reviewing to acquire basic and grade-level vocabulary	28	Before You Begin
	80	Before You Begin
	214	Before You Begin
	364	Before You Begin
	416	Before You Begin
	454	Before You Begin
(1)(D) speak using learning strategies such as requesting assistance, employing non-verbal cues, and using synonyms and circumlocution (conveying ideas by defining or describing when exact English words are not known)	11	Communicating about Drafting
	397	Communicating about Drafting
	415	Communicating about Drafting
	540	Communicating about Drafting
	565	Communicating about Drafting
(1)(F) use accessible language and learn new and essential language in the process	180	Communicating about Drafting

Standard	Page(s)	Specific Location
(2) Cross-curricular second language acquisition/listening. The ELL listens to a variety of speakers including teachers, peers, and electronic media to gain an increasing level of comprehension of newly acquired language in all content areas. ELLs may be at the beginning, intermediate, advanced, or advanced high stage of English language acquisition in listening. In order for the ELL to meet grade-level learning expectations across the foundation and enrichment curriculum, all instruction delivered in English must be linguistically accommodated (communicated, sequenced, and scaffolded) commensurate with the student's level of English language proficiency. The student is expected to:		
(2)(C) learn new language structures, expressions, and basic and academic vocabulary heard during classroom instruction and interactions	49	Communicating about Drafting
	56	Before You Begin
	79	Communicating about Drafting
	180	Communicating about Drafting
	207	Communicating about Drafting
	246	Before You Begin
	357	Communicating about Drafting
	453	Communicating about Drafting
	497	Communicating about Drafting
(2)(D) monitor understanding of spoken language during classroom instruction and interactions and seek clarification as needed	56	Before You Begin
	103	Communicating about Drafting
	246	Before You Begin
	321	Communicating about Drafting
	357	Communicating about Drafting
	388	Before You Begin
	427	Communicating about Drafting
	439	Communicating about Drafting
	498	Before You Begin
	565	Communicating about Drafting
(2)(E) use visual, contextual, and linguistic support to enhance and confirm understanding of increasingly complex and elaborated spoken language	302	Communicating about Drafting
	406	Before You Begin
	415	Communicating about Drafting
	428	Before You Begin
	540	Communicating about Drafting

Standard	Page(s)	Specific Location
(2)(I) demonstrate listening comprehension of increasingly complex spoken English by following directions, retelling or summarizing spoken messages, responding to questions and requests, collaborating with peers, and taking notes commensurate with content and grade-level needs	2	Before You Begin
	11	Communicating about Drafting
	130	Communicating about Drafting
	142	Before You Begin
	180	Communicating about Drafting
	196	Before You Begin
	310	Before You Begin
	357	Communicating about Drafting
	397	Communicating about Drafting
	427	Communicating about Drafting
	439	Communicating about Drafting
	440	Before You Begin
	467	Communicating about Drafting
	510	Before You Begin
(3) Cross-curricular second language acquisition/speaking. The ELL speaks in a variety of modes for a variety of purposes with an awareness of different language registers (formal/informal) using vocabulary with increasing fluency and accuracy in language arts and all content areas. ELLs may be at the beginning, intermediate, advanced, or advanced high stage of English language acquisition in speaking. In order for the ELL to meet grade-level learning expectations across the foundation and enrichment curriculum, all instruction delivered in English must be linguistically accommodated (communicated, sequenced, and scaffolded) commensurate with the student's level of English language proficiency. The student is expected to:		
(3)(B) expand and internalize initial English vocabulary by learning and using high-frequency English words necessary for identifying and describing people, places, and objects, by retelling simple stories and basic information represented or supported by pictures, and by learning and using routine language needed for classroom communication	2	Before You Begin
	11	Communicating about Drafting
	80	Before You Begin
	130	Communicating about Drafting
	180	Communicating about Drafting
	196	Before You Begin
	236	Communicating about Drafting
	246	Before You Begin
	364	Before You Begin
	397	Communicating about Drafting
	440	Before You Begin
	454	Before You Begin
	565	Communicating about Drafting
(3)(C) speak using a variety of grammatical structures, sentence lengths, sentence types, and connecting words with increasing accuracy and ease as more English is acquired	236	Communicating about Drafting
	565	Communicating about Drafting



Standard	Page(s)	Specific Location
(3)(D) speak using grade-level content area vocabulary in context to internalize new English words and build academic language proficiency	2	Before You Begin
	11	Communicating about Drafting
	49	Communicating about Drafting
	79	Communicating about Drafting
	196	Before You Begin
	207	Communicating about Drafting
	246	Before You Begin
	357	Communicating about Drafting
	415	Communicating about Drafting
	427	Communicating about Drafting
	439	Communicating about Drafting
	440	Before You Begin
	453	Communicating about Drafting
	540	Communicating about Drafting
	565	Communicating about Drafting
(3)(E) share information in cooperative learning interactions	2	Before You Begin
	12	Before You Begin
	49	Communicating about Drafting
	79	Communicating about Drafting
	110	Before You Begin
	196	Before You Begin
	207	Communicating about Drafting
	277	Communicating about Drafting
	286	Before You Begin
	328	Before You Begin
	415	Communicating about Drafting
	440	Before You Begin
	453	Communicating about Drafting
	467	Communicating about Drafting
	468	Before You Begin
	477	Communicating about Drafting
	497	Communicating about Drafting
	540	Communicating about Drafting

Standard	Page(s)	Specific Location
(3)(F) ask and give information ranging from using a very limited bank of high-frequency, high-need, concrete vocabulary, including key words and expressions needed for basic communication in academic and social contexts, to using abstract and content-based vocabulary during extended speaking assignments	27 56 103 142 246 310 321 510	Communicating about Drafting Before You Begin Communicating about Drafting Before You Begin Before You Begin Before You Begin Communicating about Drafting Before You Begin
(3)(G) express opinions, ideas, and feelings ranging from communicating single words and short phrases to participating in extended discussions on a variety of social and grade-appropriate academic topics	302 427 439	Communicating about Drafting Communicating about Drafting Communicating about Drafting
(3)(H) narrate, describe, and explain with increasing specificity and detail as more English is acquired	180	Communicating about Drafting
(4) Cross-curricular second language acquisition/reading. The ELL reads a variety of texts for a variety of purposes with an increasing level of comprehension in all content areas. ELLs may be at the beginning, intermediate, advanced, or advanced high stage of English language acquisition in reading. In order for the ELL to meet grade-level learning expectations across the foundation and enrichment curriculum, all instruction delivered in English must be linguistically accommodated (communicated, sequenced, and scaffolded) commensurate with the student's level of English language proficiency. For kindergarten and first grade, certain of these student expectations apply to text read aloud for students not yet at the stage of decoding written text. The student is expected to:		
(4)(C) develop basic sight vocabulary, derive meaning of environmental print, and comprehend English vocabulary and language structures used routinely in written classroom materials	56 130 246	Before You Begin Communicating about Drafting Before You Begin
(4)(D) use prereading supports such as graphic organizers, illustrations, and pretaught topic-related vocabulary and other prereading activities to enhance comprehension of written text	482	Before You Begin

Standard	Page(s)	Specific Location
(4)(F) use visual and contextual support and support from peers and teachers to read grade-appropriate content area text, enhance and confirm understanding, and develop vocabulary, grasp of language structures, and background knowledge needed to comprehend increasingly challenging language	2	Before You Begin
	10	Before You Begin
	49	Communicating about Drafting
	56	Before You Begin
	79	Communicating about Drafting
	80	Before You Begin
	110	Before You Begin
	142	Before You Begin
	196	Before You Begin
	207	Communicating about Drafting
	246	Before You Begin
	277	Communicating about Drafting
	286	Before You Begin
	302	Communicating about Drafting
	310	Before You Begin
	321	Communicating about Drafting
	328	Before You Begin
	357	Communicating about Drafting
	364	Before You Begin
	381	Communicating about Drafting
	388	Before You Begin
	415	Communicating about Drafting
	427	Communicating about Drafting
	439	Communicating about Drafting
	440	Before You Begin
	453	Communicating about Drafting
	454	Before You Begin
	467	Communicating about Drafting
	468	Before You Begin
	477	Communicating about Drafting
	497	Communicating about Drafting
	498	Before You Begin
	509	Communicating about Drafting
	510	Before You Begin
	540	Communicating about Drafting
	544	Before You Begin
	565	Communicating about Drafting

Standard	Page(s)	Specific Location
(4)(G) demonstrate comprehension of increasingly complex English by participating in shared reading, retelling or summarizing material, responding to questions, and taking notes commensurate with content area and grade-level needs	2	Before You Begin
	11	Communicating about Drafting
	28	Before You Begin
	103	Communicating about Drafting
	180	Communicating about Drafting
	196	Before You Begin
	214	Before You Begin
	357	Communicating about Drafting
	397	Communicating about Drafting
	415	Communicating about Drafting
	427	Communicating about Drafting
	439	Communicating about Drafting
	540	Communicating about Drafting