CAREER PATHS

Electrician

Virginia Evans
Jenny Dooley
Tres O'Dell

Express Publishing

CAREER PATHS

Electrician

Book 1

Virginia Evans
Jenny Dooley
Tres O'Dell

Express Publishing

Scope and Sequence

Unit	Topic	Reading context	Vocabulary	Function
1	General Tools	Company manual	diagonal cutters, end cutting pliers, flashlight, long nose (needle nose) pliers, measuring tape, screwdriver, side cutters, tool kit, utility knife, wire strippers	Stating a preference
2	More Tools	Web forum	allen wrench, crimper, duct tape, electrical tape, hacksaw, hammer, nut driver, Phillips screwdriver, socket wrench, tool belt, torque wrench	Asking for something
3	Power Tools – Drills and Saws	Catalog page	auger bit, circular saw, drill, drill bit, hole saw bit, reciprocating saw, spade bit, twist bit, wood auger, jigsaw	Stating an opinion
4	Specialized Tools	Company webpage	conduit bender, fish tape, hammer drill, labeling machine, level, lineman's pliers, masonry drill bit, multimeter, plug-in analyzer, stepped drill bit, stud punch	Thanking someone
5	Materials	Trade magazine article	block, brick, cement, concrete, copper, drywall, mortar, plaster, plywood, rotary drill, rotary hammer, steel, stone, wood	Asking for advice
6	Safety	Safety poster	arc flash blanket, arc flash clothing, arc shield, electric shock, electrical hot gloves, hard hat, hot stick, leather gloves, rubber mat, safety glasses, steel toe boots	Getting someone's attention
7	Actions	Occupational manual	climb, grab, kneel, release, split, stand, stoop, turn off, turn on	Asking for information
8	More Actions	DIY instructions	bind, connect, inspect, install, insulation, pull, push, splice, strip, test, twist	Giving instructions
9	Numbers	Chart	add, and, come to, divided by, eighth, equal, hundred, is, less, minus, multiplied by, over, plus, subtract, times	Talking about calculations
10	Measurements	Magazine article	caliper, Celsius, centimeter, convert, degree, Fahrenheit, foot, imperial, inch, meter, metric, micrometer, millimeter, round off, yard	Pointing out a mistake
11	Elements of Electricity	College course catalog	AC, ampere, current, DC, electron, ohm, resistance, volt, voltage, watt	Asking for clarification
12	Electrical Safety	Safety pamphlet	burn, de-energize, electrocution, hazard, live wire, lockout/tagout procedure, paralyze, risk, shock, static electricity	Giving commands
13	Types of Wires	Magazine article	armored cable (AC), conductor, insulated, jacket, knob and tube (K&T) wiring, metal-clad (MC) cable, nonmetallic sheath (NM) cable, replace, service entrance (SE) cable, underground feeder (UF) cable	Checking for understanding
14	Wire Codes	Cheat sheet	code, diameter, embossed, gauge, location, maximum, ought, rating, resistant, sheath	Asking for repetition
15	Wire Connectors	Store webpage	crimp-on connector, grounding connector, push-in connector, shell, spring, thermoplastic, twist-on connector, underground connector, waterproof connector, winged connector	Offering help

Table of Contents

CAREER PATHS

Electrician

Book 2

Virginia Evans
Jenny Dooley
Tres O'Dell

Express Publishing

Scope and Sequence

Unit	Topic	Reading context	Vocabulary	Function
1	Electrical Connectors	Store webpage	blade connector, clamp connector, connector, insulation displacement connector, offset connector, plug and socket connector, post connector, ring terminal, solderless connector, spade terminal, split bolt connector, terminal block connector	Repeating something back
2	Conduit Systems	Newspaper advertisement	building code, conduit, electrical metallic tubing, flexible, grounded, installation, moisture tight fitting, non-corrosive, non-metallic tubing, protection, route	Making an appointment
3	Buried and Aerial Service Entrances	Textbook excerpt	aerial service, buried service, clearance, drip loop, right-of-way, service cable, service drop, service entrance (SE), service lateral, utility pole, utility transformer	Giving advice
4	Panels	Magazine article	accommodate, branch circuit, capacity, cut off, function, gadget, hot bus, main service panel, main switch, manually, neutral bus, overcurrent, safeguard	Offering choices
5	Subpanels	DIY web article	bond, component, continuous, feeder cable, grounding conductor, hot conductor, malfunction, neutral return conductor, remote, safety precaution, secondary, short circuit, subpanel	Giving praise
6	Fuses and Circuit Breakers	Manufacturer's guide	blown fuse, cartridge fuse, circuit breaker, double pole breaker, fuse, ground fault, overload, plug fuse, replacement, single pole breaker, trip	Describing an object
7	Balancing the Load	DIY magazine article	amperage, analyze, appliance, balance, consumption, corresponding, draw, electrical load, owner's manual, parity, snap, stability, transfer	Describing a process
8	Receptacle Boxes	Textbook excerpt	cut-in box, deep, handy box, integral nail box, mount, outlet box, overcrowded, pancake box, shallow, short, volume, weatherproof	Giving feedback
9	Receptacles	Web forum	cheater plug, duplex outlet, grounding pin, grounding slot, hook up, immediate turn plug, narrow slot, outlet, outlet cap, plug, polarity, single outlet, wide slot	Giving assurances
10	Switch Boxes	DIY webpage	box extender, bracket, control, coverplate, flush, four gang box, grounding screw, single gang box, three gang box, two gang box, wall cavity	Declining something
11	Types of Switches	Web forum	commercial grade switch, dimmer switch, double pole switch, four-way switch, keyed switch, open circuit, pilot light switch, residential grade switch, single pole switch, three-way switch, timer switch, toggle switch	Asking for an opinion
12	Grounding Systems	Advertisement	clamp, earth grounding system, equipment grounding conductor, estimate, fault current, ground, ground fault, ground rod, grounding electrode conductor, stray voltage, surge arrester	Finding out cost
13	Installing a Grounding System	Installation pamphlet	bonding wire, ditch, drive, footer, ground wire, panel bond, parallel, resistance, soil condition, sphere of influence	Agreeing with an assessment
14	Electrical Fires	Government fact sheet	combustible, electrical fire, evaluate, faulty, fixed wiring, flicker, frayed, ignite, maintenance, overheat, precaution	Pointing things out
15	Electrical Safety at Home	Website article	adapter, baseboard, breaker box, fail, flammable, permanent, prevention, safety cover, securely, temporary, traffic, worn out, zip cord	Saying something is dangerous

Table of Contents

CAREER PATHS

Electrician

Book 3

Virginia Evans
Jenny Dooley
Tres O'Dell

Express Publishing

Scope and Sequence

Unit	Topic	Reading context	Vocabulary	Function
1	How GFCIs Work	Webpage article	compare, downstream, dry board, exceed, flow out, general-purpose, ground fault circuit interrupter (GFCI), mild, nonconductive, prong, reliable, vertical, via	Stressing the importance of something
2	Types of GFCIs	Installation work order	circuit breaker ground fault circuit interrupter, configuration, convenient, cord connected ground fault circuit interrupter, go with, last resort, manufacturer, max out, portable ground fault circuit interrupter, procure, receptacle ground fault circuit interrupter, renovated, reset, standard	Agreeing with someone
3	Installing GFCIs	DIY website article	attach, care, coil, feature, imbalance, line connection, load connection, outgoing, probe, provide, reference, reverse, sensor, sticker, terminal	Starting a conversation
4	Testing GFCIs	Email	accurate, diagnose, fault, GFCI tester, give out, indicate, Interrupt, rely on, test button, throw (as in throw a switch), verify	Comparing
5	AFCIs	Magazine article	arc fault, erratic, exemption, fine print, leakage, marking, mix up, monitor, national electrical code, primary, respective, sense, sustain, unintentional	Turning down a request
6	Lights	Textbook excerpt	ballast, bare, base depth, bulb, buzz, ceiling box, corrode, dual pin bulb, enclosed, fluorescent, high output bulb, incandescent, joist, light fixture, on site, single pin bulb, socket	Talking about schedule
7	Ceiling Fans	Instruction manual	ceiling fan, circulate, clearance, cross support, follow, independently, remote control, stable, swing-up, variable-speed, wobble	Taking responsibility
8	Outdoor Light Fixtures	Brochure	anticorrosion, burn out, coverage, dusk-to-dawn light, entry light, exposed, floodlight, landscape light, motion detector, photoelectric cell, security, sensitivity, slant, watertight	Describing a place
9	Kitchen Appliances	Installation manual	adjacent, appliance, derate, dishwasher, drop-in, electric stove, frame screw, garbage disposal, hard-wired, nameplate rating, range hood, refrigerator, slide-in, strain relief, whip	Figuring out a problem
10	Electric Heaters	Work order	air gap, baseboard heater, consumption, coverplate, digital, electric wall heater, feed, integral thermostat, response time, short out, variable-wattage unit, wall thermostat	Trouble-shooting
11	Utility Room Appliances	Magazine article	air handler, corrugated duct, cutoff switch, disconnect, electric clothes dryer, feed wire, four-conductor cable, heat pump, rigid duct, vent run, water heater	Dividing up the work
12	Submersible Pumps	Email	condensation, depth, direct burial, horsepower, insulated crimp, pool, pressure switch, pump wire, submersible pump, well, well cap, well casing	Explaining differences between things
13	Induced Voltage	Pamphlet	build up, charge, discharge, drain, electrode, induced voltage, jumper, lightning, magnetic line of force, shield, surge, zap	Asking how something works
14	Direct Strikes	Trade magazine article	assumption, build up, coaxial cable, endanger, ground resistance, low-resistance grounding system, massive, peak, pulse, strike, utility line, utility transformer, voltage spike	Explaining options
15	Surge Protection	Company webpage	accessible, ground skew, grounding block, hardwired surge protection, network interface device (NID), plug-in surge protection, point-of-entry, point-of-use, receptacle strip, recur, siding, surge breaker, surge protector	Asking questions to get more information

Table of Contents

1 Electrical Connectors

HOME | ABOUT US | SERVICES | CONTACT

www.donselectricalsupply.com

Don's Electrical Supply

Don's Electrical Supply has all the **connectors** you need at great prices. Whatever the connection, we have the connector!

Are you looking to connect wires to equipment? We have many connectors to serve your needs. We carry **post connectors**, **blade connectors**, **ring terminals**, and **spade terminals**.

Or perhaps you need to connect wires to other wires. If this is the case, we can provide you with a variety of **solderless connectors**. We have **terminal block connectors**, **plug and socket connectors**, and **clamp connectors**.

We also have some other items for more specific types of connections:

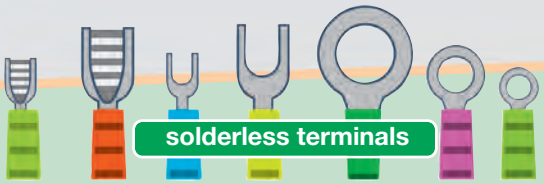
Insulation displacement connectors are available if you don't want to strip wires.

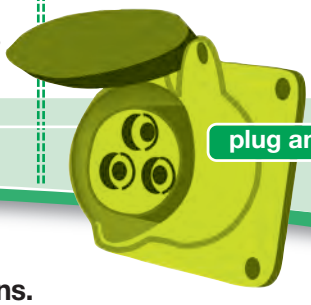
For connecting larger size wire, we have **split bolt connectors**.

For changing the wiring on your electrical box, **offset connectors** are available.

You can place an order online anytime at www.donselectricalsupply.com.

You can also call us at 1-800-376-8532 between 8:00 a.m. and 8:00 p.m.





Get ready!

1 Before you read the passage, talk about these questions.

1 What are some different kinds of wire connectors?

2 When is it acceptable for electricians to substitute one kind of connector for another?

Reading

2 Read the store webpage about connectors. Then, mark the following statements as true (T) or false (F).

1 __ Split bolt connectors are used for changing wires on electrical boxes.

2 __ Insulation displacement connectors make stripping wires unnecessary.

3 __ Post connectors splice two different wires.

Vocabulary

3 Match the words (1-4) with the definitions (A-D).

1 __ offset connector
2 __ clamp connector
3 __ split bolt connector
4 __ insulation displacement connector

A connects wires without stripping them

B uses a V-shaped ring to connect wires

C changes the direction of a wire

D used for taps and splices in building wiring

4 Place the words and phrases from the word bank under the correct headings.

WORD BANK

terminal block connector
post connector clamp connector
blade connector
ring terminal spade terminal
plug and socket connector

Connects Wires to Equipment
_____
_____
_____
_____
Connects Wires Together
_____
_____
_____
_____

5 **Listen and read the store webpage about connectors again. Why are there so many different types of connectors?**

Listening

6 **Listen to a conversation between an electrician and a supplier. Choose the correct answers.**

1 What is the purpose of the conversation?

- **A** to place an order for different connectors
- **B** to find out which connectors are in stock
- **C** to learn how to use each kind of connector
- **D** to compare the prices of connectors

2 Why does the man order a post connector?

- **A** to connect two different kinds of wires
- **B** to connect a wire to some speakers
- **C** to cap off the end of a spliced wire
- **D** to connect a large wire

7 **Listen again and complete the conversation.**

Electrician: I have **1** _____ _____ _____ that I need to order.

Supplier: Okay. We have all types of connectors.

Electrician: Good. First of all, I need something to **2** _____ _____ _____ to some large speakers. What about a post connector?

Supplier: That would work. I'll just check availability. You said **3** _____ _____, right? Okay, I do have those **4** _____ _____ right now.

Electrician: Great. I'll take a pack of those. I also need to connect some wires. Do you have any **5** _____ _____ ?

Supplier: We sure do. What kind do you need?

Electrician: I'll take two packs of **6** _____ _____ please, and four packs of socket connectors.

solderless connector

Speaking

8 **With a partner, act out the roles below based on Task 7. Then, switch roles.**

USE LANGUAGE SUCH AS:

First of all ...
What about ...?
I'll take ...

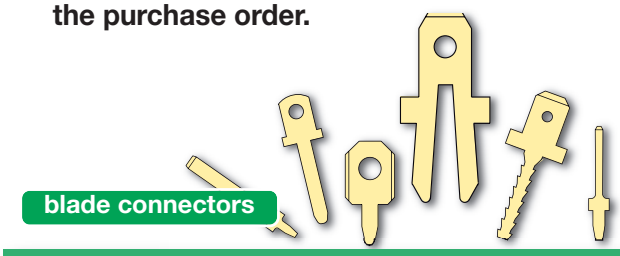
Student A: You are an electrician. Talk to Student B about:

- why you need connectors
- what kinds of connectors you need
- the price of the connectors

Student B: You are a supplier. Talk to Student A about the different kinds of connectors.

Writing

9 **Use the conversation from Task 8 to fill out the purchase order.**



blade connectors

Purchase Order Form

Item: _____

Quantity: _____

Item: _____

Quantity: _____

Total price: _____

Reason for Order: _____

Additional Information: _____

7 Ceiling Fans

Homebreeze
Installation Guide
Model: Ceiling Fan UJ790

Important: Failure to **follow** these instructions during installation may present a safety hazard.

1 Before you begin, make sure you have enough space to install your **ceiling fan**. Without proper **clearance**, the fan may break or cause damage to surrounding walls and fixtures when operated.

2 Locate an appropriate **cross support**. We recommend mounting the fan **independently** from the included ceiling box so it stays **stable**. A fan towards the middle of the room will **circulate** the air most effectively.

3 Hang the fan with the included metal ceiling box (see page 4 for detailed instructions). Homebreeze Model UJ790 is a **swing-up** fan, so you will be able to wire the fan easily after you hang it.

4 Wire the fan, or have an electrician wire it for you (see page 6 for detailed instructions).

5 Swing the fan into place and secure the final screws in the ceiling box.

6 Test the fan to make sure that it does not **wobble**. The UJ790 is a **variable-speed** fan, so use the highest speed setting to perform this test. You will need two AA batteries to operate the **remote control**.

Get ready!

1 Before you read the passage, talk about these questions.

1 How does a ceiling fan work?

2 What should be considered when installing a ceiling fan?

Reading

2 Read the instruction manual on a ceiling fan. Then, complete the table using information from the manual.

Step	Description
Before Installation	_____ _____
Installation	_____ _____
After Installation	_____ _____

Vocabulary

3 Write a word that is similar in meaning to the underlined part.

1 This light fixture should be installed <u>without relying on other parts</u> to the ceiling beam.
_ n d _ _ _ n d _ _ t l _

2 If the fan <u>moves back and forth unsteadily</u>, it is not installed correctly. w _ _ b l _ s

3 We need a fan that is <u>capable of operating fast or slow</u> to use in the wintertime.
_ _ r i _ b l _ - _ p _ _ d

4 Before installation, the electrician located the <u>solid beam in the ceiling</u>.
c _ _ s s _ u _ _ o r _

5 Tighten the screws to keep each fixture <u>securely in one place</u>. _ t _ b _ e

4 **Fill in the blanks with the correct words and phrases from the word bank.**

WORD BANK

circulate remote control swing-up follow ceiling fan clearance

1 Do you have enough _____ to install a fan here?
2 You must always _____ the instructions.
3 The bedroom lights are operated by _____ .
4 The purpose of a fan is to _____ air.
5 This _____ fan is easy to wire after hanging.
6 The _____ makes the kitchen cooler.

5 **Listen and read the instruction manual on a ceiling fan again. What is the final step after installation?**

Listening

6 **Listen to a conversation between two electricians. Mark the following statements as true (T) or false (F).**

1 __ The wrong type of light fixture was installed.
2 __ The woman's mistake caused a serious electrical malfunction.
3 __ The woman forgot to test the fans after installation.

7 **Listen again and complete the conversation.**

Electrician 1: There seems to be something wrong with the way the **1** _____ _____ are attached.
Electrician 2: Really? I tested the lights and they seem okay.
Electrician 1: Well, the wiring is fine, but **2** _____ _____ _____ when I turn on the fan at high speed.
Electrician 2: Oh, I see what you mean. The whole thing **3** _____ _____ _____ .
Electrician 1: A fan wobbling like that won't **4** _____ _____ _____ properly. Or it could cause more serious problems, like electrical malfunction or damage to the fan.
Electrician 2: I know, I know. That was my fault. I should have **5** _____ _____ _____ right away to make sure they were stable.
Electrician 1: That's okay, Karen. Now that you've seen what happens, I'm sure you'll remember next time.
Electrician 2: I will. And I'll **6** _____ _____ _____ right away to tighten those light fixtures and make sure they're secure.

Speaking

8 **With a partner, act out the roles below based on Task 7. Then, switch roles.**

USE LANGUAGE SUCH AS:

I tested the ...
The ... is fine, but look what happens ...
I should have ...

Student A: You are an electrician. Talk to Student B about:

- an error while installing fan
- possible consequences
- what action is needed

Student B: You are an electrician. Talk to Student A about a fan installation error.

Writing

9 **Use the conversation from Task 8 to write the electrician's work report. Write about:**

- item installed
- nature of installation error
- why hazardous
- steps taken to correct problem

Glossary

AC [N-UNCOUNT-U11] **AC**, or alternating current, is a type of electric current that constantly flows back and forth in different directions.

add [V-T-U9] To **add** numbers is to combine them.

allen wrench [N-COUNT-U2] An **allen wrench** is an L-shaped piece of metal with a six-sided head used to tighten screws and bolts.

ampere [N-COUNT-U11] An **ampere** is a unit of measurement for electricity.

and [CONJ-U9] **And** is used when combining or adding numbers. For example, one and one equals two.

arc flash blanket [N-COUNT-U6] An **arc flash blanket** is a blanket electricians use to protect themselves from electrical blasts and fires.

arc flash clothing [N-UNCOUNT-U6] **Arc flash clothing** is pants, shirts, jackets, and shoes designed to protect electricians from electric shock.

arc shield [N-COUNT-U6] An **arc shield** is a protective plastic shield for the eyes and face that fits onto a hard hat.

armored cable (AC) [N-COUNT-U13] An **armored cable (AC)** is a wire encased in a spiraled steel insulation with no grounding wires.

auger bit [N-COUNT-U3] An **auger bit** is a bit that cuts into wood. These bits are usually from 17 to 25 centimeters long.

bind [V-T-U8] To **bind** is to put two things together with rope or tape.

block [N-COUNT-U5] A **block** is a piece of stone, wood or other material that is solid with flat surfaces on each side.

brick [N-COUNT-U5] A **brick** is a block of clay that is baked until it is hard and used for building.

burn [N-COUNT-U12] A **burn** is a painful injury to the body caused by heat.

caliper [N-COUNT-U10] A **caliper** is a small measuring device.

Celsius [N-UNCOUNT-U10] **Celsius** is the metric temperature scale where water freezes at 0 degrees and boils at 100 degrees.

cement [N-UNCOUNT-U5] **Cement** is a mixture of ground limestone and clay.

centimeter [N-COUNT-U10] A **centimeter** is a metric unit that measures length or distance, equal to ten millimeters.

circular saw [N-COUNT-U3] A **circular saw** is an electric or gas-operated saw with a round blade.

climb [V-T-U7] To **climb** is to ascend or move up towards the top of something.

code [N-COUNT-U14] A **code** is a set of numbers or letters that gives information about something.

come to [V PHRASE-U9] To **come to** a number is to equal that number.

concrete [N-UNCOUNT-U5] **Concrete** is a hard material made by combining cement, small stones, sand and water.

conductor [N-COUNT-U13] A **conductor** is a wire. It is the metal part of a cable that carries electricity.

conduit bender [N-COUNT-U4] A **conduit bender** is an instrument that twists objects made of metal.

connect [V-T-U8] To **connect** is to plug in or turn on electricity or power.

convert [V-T-U10] To **convert** something is to change it from one state or mode into another.

copper [N-UNCOUNT-U5] **Copper** is a reddish brown metal that is often used for pipes or wires.

crimper [N-COUNT-U2] A **crimper** is a tool used for pushing connectors around bare wires.

crimp-on connector [N-COUNT-U15] A **crimp-on connector** is a type of connector that is fixed in place by using a crimping tool.

current [N-COUNT-U11] A **current** is the quantity of electricity that is flowing in a wire at a specific time.

CAREER PATHS

Electrician

Career Paths: Electrician is a new educational resource for electricians who want to improve their English communication in a work environment. Incorporating career-specific vocabulary and contexts, each unit offers step-by-step instruction that immerses students in the four key language components: reading, listening, speaking, and writing. ***Career Paths: Electrician*** addresses topics including electrical concepts, types of wires, electrical service entrances, installing appliances, and wire codes.

The series is organized into three levels of difficulty and offers a minimum of 400 vocabulary terms and phrases. Every unit includes a test of reading comprehension, vocabulary, and listening skills, and leads students through written and oral production.

Included Features:

- A variety of realistic reading passages
- Career-specific dialogues
- 45 reading and listening comprehension checks
- Over 400 vocabulary terms and phrases
- Guided speaking and writing exercises
- Complete glossary of terms and phrases

The **Teacher's Guide** contains detailed lesson plans, a full answer key and audio scripts.

The **audio CDs** contain all recorded material.

Express Publishing

ISBN 978-1-4715-0524-9

9 781471 505249

Published by Express Publishing

Liberty House, Greenham Business Park, Newbury,
Berkshire RG19 6HW, United Kingdom
Tel.: (0044) 1635 817 363
Fax: (0044) 1635 817 463
email: inquiries@expresspublishing.co.uk
www.expresspublishing.co.uk

First published 2012
Fourth impression 2017

Made in EU

ISBN 978-1-4715-0524-9

Acknowledgements

Authors' Acknowledgements
We would like to thank all the staff at Express Publishing who have contributed their skills to producing this book. Thanks for their support and patience are due in particular to: Alex Newton (Editor in Chief); Sean Todd (senior editor); Steve Miller (editorial assistant); Richard White (senior production controller); the Express design team; Sweetspot (recording producers). We would also like to thank those institutions and teachers who piloted the manuscript, and whose comments and feedback were invaluable in the production of the book.

Every effort has been made to trace all the copyright holders. If any have been inadvertently overlooked, the publishers will be pleased to make the necessary arrangements at the first opportunity.