

Teaching Units (45min)	Overview	Materials
1	Introduction using two controversial articles on electro-mobility. Discussion with partners and classroom	<ul style="list-style-type: none"> ▪ Link 1.1: Possible Pro-Article ▪ Link 1.2: Possible Contra-Article
1	Introduction of the Direct Current(DC) Motor	<ul style="list-style-type: none"> ▪ Link 2.1: DC Motor Kit ▪ Link 2.2: Instructions for DIY DC Motor ▪ Link 2.3: Video ▪ Link 2.4: DC Motor Geogebra-Applet ▪ Photo 2.I: Experimental setup for DC Motor
Student workbook for the development and collection of results towards the writing and self-evaluation of a newspaper article.		<ul style="list-style-type: none"> ▪ Workbook 0.A: Booklet (without solutions) ▪ Workbook 0.B: Booklet (including solutions)
2-3	Development of relevant content knowledge for the discussion of electric vehicles utilizing four group working stations (Alternating Current(AC) motor, recovery, battery, and efficiency)	<p><u>Station 3a: AC Motor</u></p> <ul style="list-style-type: none"> ▪ Material 3a.A: Station Card Motor ▪ Photo 3a.I: Setting up DIY DC Motor ▪ Photo 3a.II: Setting up Dynamo as AC-Motor <p><u>Station 3b: Recovery</u></p> <ul style="list-style-type: none"> ▪ Material 3b.A: Station Card Recovery ▪ Photo 3b.I: Motor-Generator-Principle ▪ Photo 3b.II: Dynamo as a Motor ▪ Photo 3b.III: Dynamo as a Generator <p><u>Station 3c: Battery</u></p> <ul style="list-style-type: none"> ▪ Material 3c.A: Station Card Battery ▪ Worksheet 3c.B: Info sheet "Battery" ▪ Worksheet 3c.C: Info sheet "Car Data" ▪ Photo 3c.I: Lemmon Battery ▪ Photo 3c.II: Energy density of a Li-Ion-battery <p><u>Station 3d: Efficiency</u></p> <ul style="list-style-type: none"> ▪ Material 3d.A: Station Card Efficiency ▪ Worksheet 3d.B: Info sheet "Entropy-Interview" ▪ Worksheet 3d.C: Info sheet "Entropy Schematic"
1	Development of a multi-disciplinary topic (environment, private life, finance, infrastructure) in individual work (or alternatively in group work)	<ul style="list-style-type: none"> ▪ Worksheet 4.A.1: Expert Worksheet "environment" ▪ Material 4.A.2: Hint-card „Umwelt" ▪ Worksheet 4.B.1: Expert Worksheet "Private Life" ▪ Material 4.B.2: Hint-card "Private Life" ▪ Worksheet 4.C.1: Expert Worksheet "Finance" ▪ Material 4.C.2: Hint-card "Finance" ▪ Worksheet 4.D.1: Expert Worksheet "Infrastructure" ▪ Material 4.D.2: Hint-card "Infrastructure"
1	Expert exchange in groups of four Discuss ideas for the article and possible improvements (including materials from station work)	– (Student Workbook)
1	Individuel writing of a newspaper article (possible use as part of a student portfolio or documentation learning progression)) Feedback forum (feedback mechanisms - various possible forms)	<ul style="list-style-type: none"> ▪ Worksheet 6.1: Assignment "My Newspaper Article" ▪ Worksheet 6.2: Evaluation Guidelines for the instructor ▪ Worksheet 6.2: Evaluation – Argument Types
Total (depending on choices): approximately 6 to 9 hours		