

Organic Chemistry (Year 12)					
Pedagogical Questions/prompts	Key Ideas				
	Organic compounds are named and drawn using the IUPAC system	Functional groups control the reactivity of an organic compound	The physical and chemical properties of a substance are determined by its structure	Organic chemistry allows us to meet society's needs, resolve issues, and develop new technologies	Experimental investigations help chemists understand properties of organic compounds
What you intend the students to learn about this idea	Functional groups (names and formulae and how to convert between) Names (of compounds with 1-8 carbons) – prefixes and suffixes Number, substituent and parent name Molecular and structural formula incl. condensed	Different patterns of reactivity of those functional groups specified in Year 12 achievement standard	Isomerism – structural and cis/trans Properties of naturally occurring molecules Homologous series – trends as C chain increases Markovnikov's rule	Anaesthetics, fumigants, polymers e.g PVC, petroleum, distillation esters, breathalysers, solvents, vinegar etc	Molymods (3D models). Reflux and distillation. Separation.
Why is it important for students to know about this?	Is the basis of organic chemistry. A systematic approach that enables logical thought. Terminology is accepted internationally – enhances scientific literacy and communication.	A fundamental concept of organic chemistry. A way of categorizing the reactions of organic compounds – can predict the behavior of a substance.	Leads to an ability to understand other forms of isomerism and to predict reactions with molecules of different chain length and functional groups	Organic chemistry can both help meet society's needs and create issues to be resolved. Relevance and purpose – being able to make informed decisions over use of chemicals.	
What else you know about this idea (that you do not intend students to know yet)?	Other functional groups e.g. amides Names of molecules with more than 8 carbon atoms	Reactions of other functional groups not included here e.g. secondary/tertiary alcohols, alkanes with epoxides etc.	Optical isomerism and E, Z isomerism	Condensation polymerization. Student dependent and time dependent. Development of illegal substances	
Difficulties/limitations connected with teaching this idea	Some compounds have common names that can confuse students e.g. acetic acid. Another language to learn (hard for ESOL), and lots of terms that are similar.	Being able to correctly identify the functional group amid so many different reactions. Tendency to compartmentalize learning and not make links to other learning. Learning other reactions that are involved.	3D spatial awareness of isomers. Lack of models	Teacher lack of knowledge of real world – not easy to find information. Research of information takes time.	
Knowledge about students' thinking	Understanding the conventions of	Their knowledge of acid-base	Limited experience of 2D and 3D thinking e.g.	Interests of students – boys/girls. Answer to 'Why do I need to know this'.	
which influences your teaching of this idea	structural formula. Prior experience/knowledge of some everyday organic compounds e.g. octane	reactions Links to everyday contexts Their knowledge of redox reactions possibly	rotation of bonds		
Other factors that influence your teaching of this idea	Availability of Molymod equipment for visualization Need for kinesthetic activity	Having classroom wall space for reaction maps	Difficulty with spatial thinking – possibly more so in girls	Answer to 'Why do I need to know this'. The enjoyable part of teaching and learning.	
Teaching procedures (and particular reasons for using these to engage with this idea)	Starting from parent alkane and scaffolding from there – building up with functional groups Verbalising names for reinforcement Model building, YouTube clips and animations	Illustrative experiments, video clips, reaction maps, class notes, animations, role plays	Animations to show rotation of bonds Molymods – manipulation Carry out reactions with actual substances	Popular music with chemistry messages. Student inquiry. Video clips, news stories	
Specific ways of ascertaining students' understanding or confusion around this idea (include likely range of responses)	Naming given organic compounds Questions, assignments, peer assessments, BestChoice – mastery, card games, dominoes, mix n match	Naming given organic compounds Questions, assignments, peer assessments, BestChoice – mastery, card games, dominoes, mix n match. Use of models, role plays	Naming given organic compounds Questions, assignments, peer assessments, BestChoice – mastery, card games, dominoes, mix n match. Use of models, role plays Identify structural formula for a given molecular formula	Identify fallacious chemical examples of advertising Develop questioning disposition Debates	