



# Organic Chemistry Tutorial

ICT Achievement Standard 2.1

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# Brief Development

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# Brief Development:

the issue

Chemistry is one of the many subjects available to study at schools in New Zealand. It is also one that is more complex, more students find it harder to grasp than their other subjects.

Our chemistry teacher this year has decided to concentrate on getting better average grades, therefore missing out an external standard to create time for extra study. This is Achievement Standard 2.5 Organic Chemistry.

However, some students still want to sit this standard in the exams. Our teacher will still tutor those who want to do it, although time will be very restricted. Because of this, students will need to do a lot of extra study on their own on this topic. This means that another source for help with this standard is required, one that they can use easily benefit effectively from, instead of having to use just textbooks.



# Brief Development:

stakeholders

People who will be affected by the result of this are any students who want to study Organic Chemistry for their external exams, and who want an extra source of revision for this. Other stakeholders are people such as Chemistry teachers and tutors, they can use the solution as an aid with teaching, or as revision at home for homework.





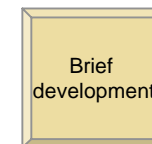
# Brief Development

key factors

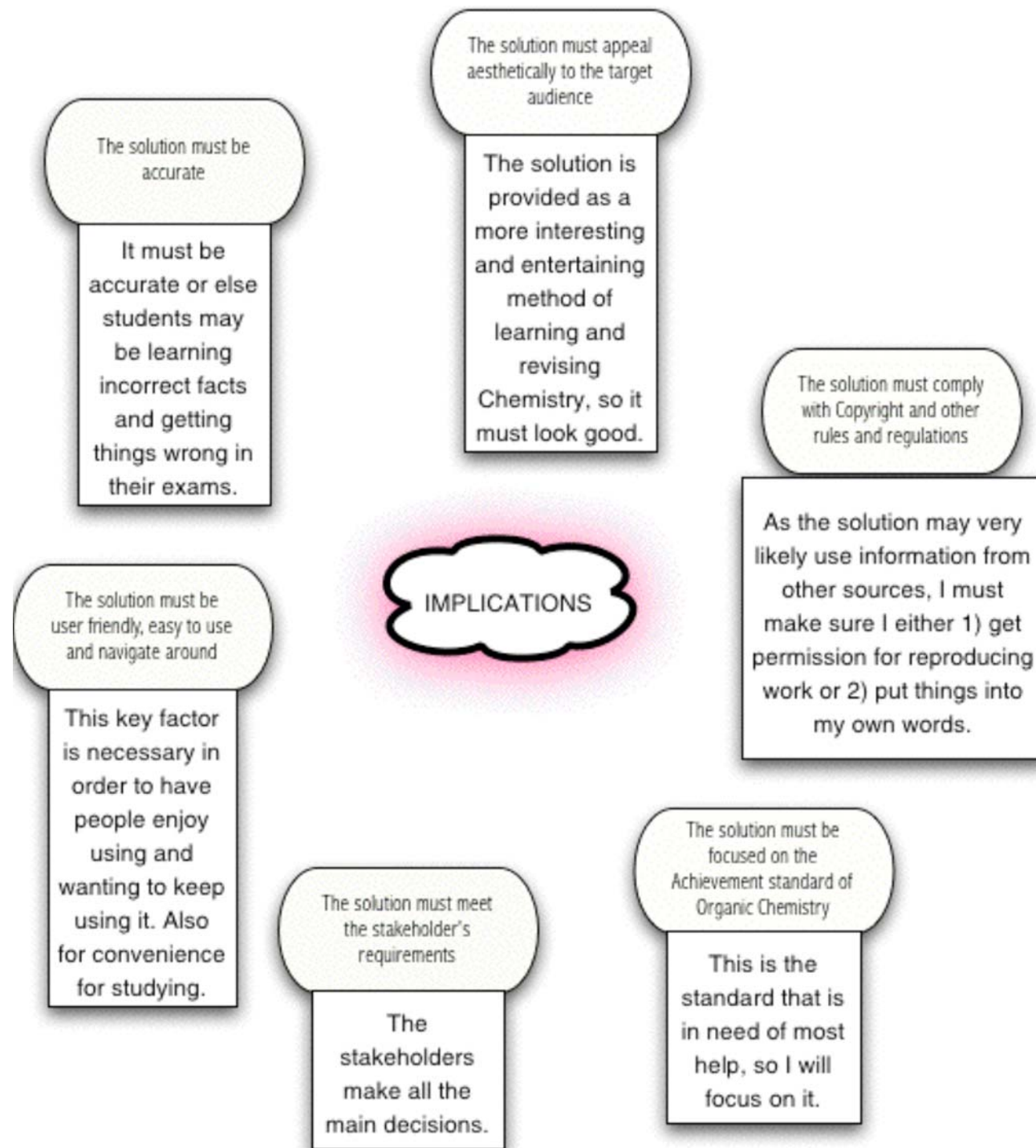
Implications

Interactions

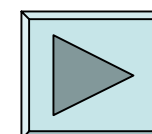
Priorities



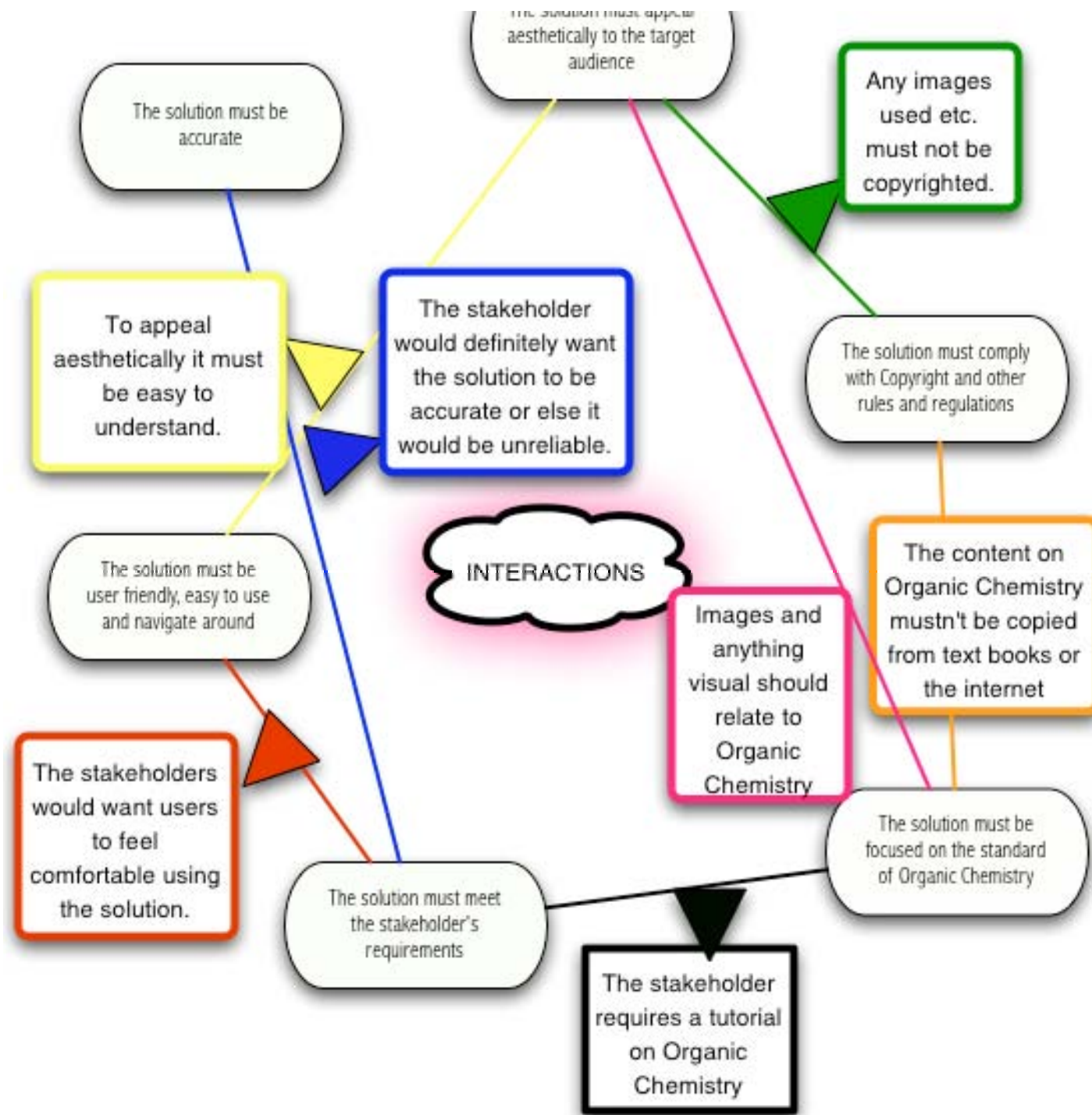
# Implications



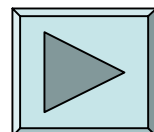
Key factors



## Interactions

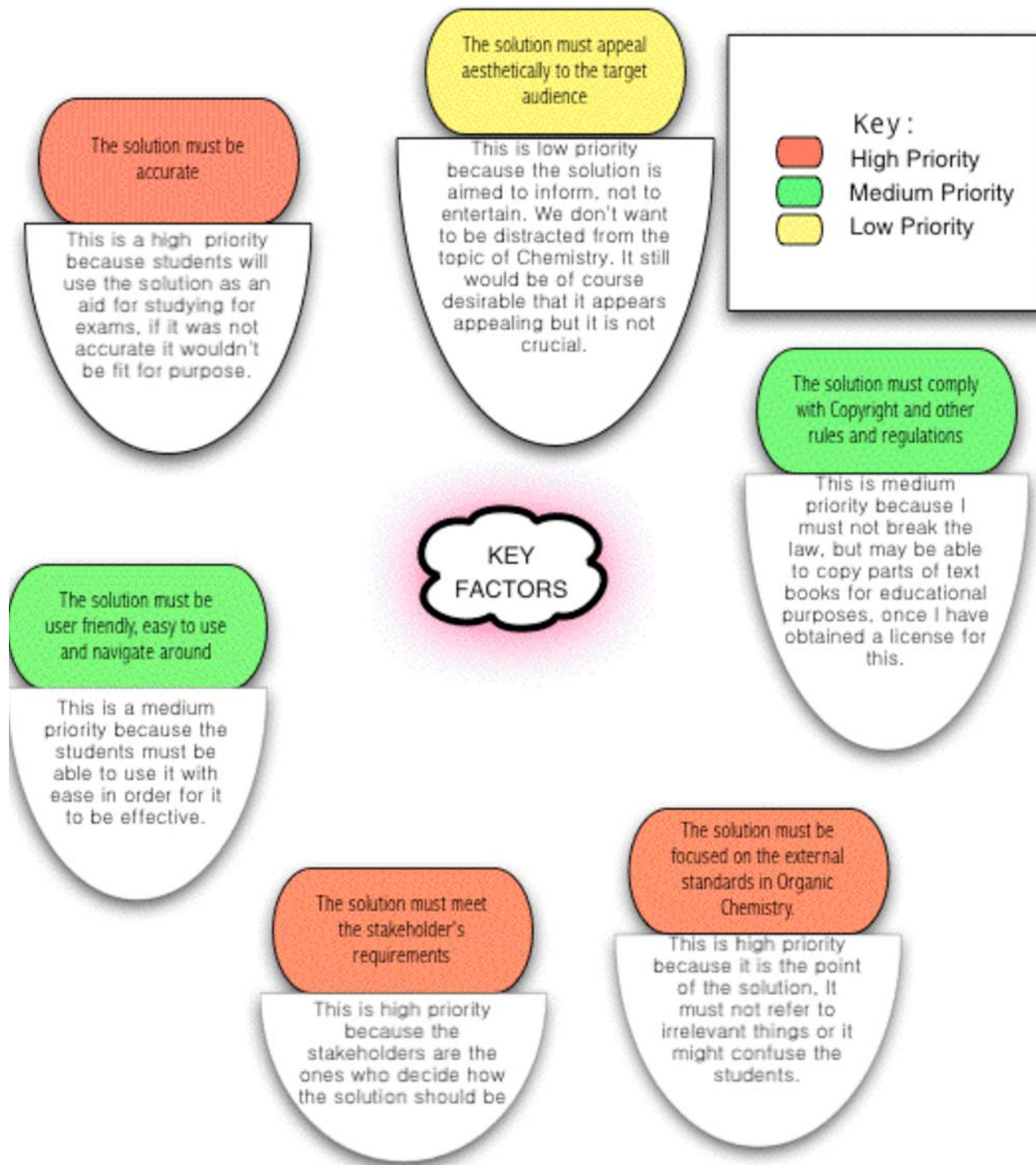


Key factors





# Priorities



Key factors

# Brief Development:

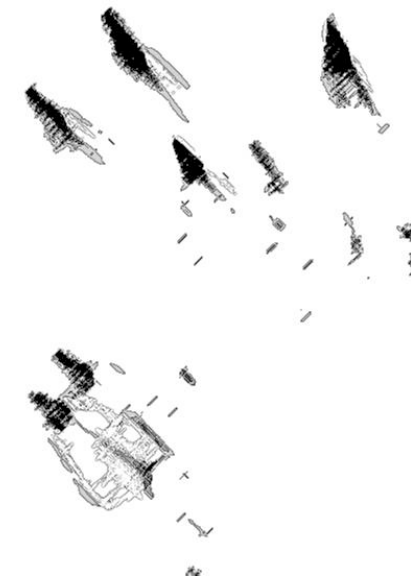
initial brief

## *Conceptual Statement:*

The issue is that students require another form of revision for their Chemistry which can be accessed without too much trouble, at home, on a CD. I have chosen to create a solution which covers the Achievement Standard 2.5 Organic Chemistry.

## *Specifications*

- ☞ It must have reasonably good use of color
- ☞ It must use some graphics
- ☞ It must have everything that the stakeholder wants
- ☞ It must be easy to understand
- ☞ It must be suitable for Year 12 students
- ☞ It must have labeled buttons
- ☞ It must have a clear navigation bar
- ☞ It must contain correct information
- ☞ The solution must be completed by the end of Term 3
- ☞ It must not contain copyrighted material



# Research

Issue

Existing Solutions

Codes and Legislations

Brief  
development



# Research issue

***The following is what is required in Chemistry standard 2.5:***

Chemistry 2.5 Describe the structural formulae and reactions of compounds containing selected organic functional groups  
Achievement criteria

The level of achievement that you will reach is decided by the way you answer each question. The key words are describe, link, and discuss aspects of chemistry.

Achievement

- \* Describe structures and reactions of organic compounds.

Achievement with Merit

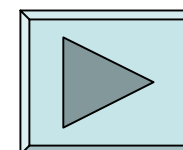
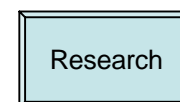
- \* Link structure and reactivity of organic compounds.

Achievement with Excellence

- \* Discuss reactivity and structure of organic compounds.

*Possible specification:*

- *The solution must familiarize students with typical questions that will be asked at achieved, merit and excellence levels.*



## SUBJECT CONTENT:

Make sure you understand the following:

- \* Recognise selected organic functional groups:
  - o haloalkanes or halogen alkanes
  - o alcohol
  - o alkene
  - o alkyne
  - o ester
  - o carboxylic acid.

Note that organic compounds will involve no more than eight carbon atoms. However, larger organic molecules may be used in questions around the linking of structure and reactivity.

Revise your understanding of hydrocarbons on the BBC website – Useful products of oil

- \* Draw structures and name:
  - o straight or branched chain hydrocarbons (up to eight carbon atoms)
  - o haloalkanes
  - o alcohols
  - o carboxylic acids (containing up to eight carbon atoms)
  - o esters formed from straight chain alcohols and carboxylic acids (up to 8 carbon atoms).

Check out this revision on writing or drawing organic formulas.

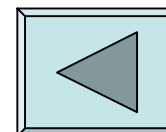
- \* Identify and draw structural geometric (cis-trans) isomers.
- \* Classify an alcohol or haloalkane as primary, secondary, or tertiary.
- \* Reactions may involve:
  - o the addition reactions of alkenes of up to eight carbon atoms with  $H_2/Pt$ ,  $Cl_2$ ,  $Br_2$ ,  $H_2O/H^+$ , and  $HCl$  (identification of major and minor products on addition to asymmetric alkenes is included)
  - o the reactions of alkenes with and  $MnO_4^-$
  - o polymerisation of alkenes
  - o halogenation of alkanes (limited to monosubstitution)
  - o oxidation of primary alcohols to form carboxylic acids
  - o elimination of water from alcohols
  - o acid reactions of carboxylic acids
  - o formation of esters (may include triglycerides) from carboxylic acids and alcohols
  - o hydrolysis of esters (may include triglycerides).

*Possible specifications:*

*The solution must cover all topics in the achievement standard.*

# Research

issue continued



# Research

existing solutions

## **Bestchoice For Chemistry**

An interactive website, managed by Sheila Woodgate at the University of Auckland, which includes content and tutorials for courses in chemistry at university and at high school. Suitable for NCEA levels two and three. Students need to register before accessing this site.

<http://www.che.auckland.ac.nz/bestchoice/>

## **Chemistry resources for students and teachers**

This website provides information about chemistry for students and teachers. Topics include chemical compounds, chemical reactions, chemical arithmetic, atomic theory, and bonding. Suitable for NCEA level two.

<http://www.chemtopics.com>

## **HyperPhysics**

This website has information about many topics in the subjects physics, chemistry, geophysics, and biology. You can select the subject area to find a topic or select from an index. Suitable for NCEA levels two and three.

<http://hyperphysics.phy-astr.gsu.edu/hbase/hframe.html>

## **Chemguide – helping you to understand chemistry**

This website provides information about all topics of chemistry at the senior school levels – atomic structure and bonding, inorganic chemistry, physical chemistry, instrumental analysis, basic organic chemistry, properties of organic compounds, organic reaction mechanisms. Suitable for NCEA levels two and three.

<http://www.chemguide.co.uk/index.html#top>

*Possible specification:*

- The solution musn't have pages that need to be scrolled a lot - put it on a separate page if you must.
- The solution should **bold** or underline or use italics for KEY WORDS.

## **Kiwiphysics**

This is an interactive CD on Physics but it is a good example that satisfies the purpose of what I am trying to achieve.

Possible specification:

- The solution must be interactive.



# Research

codes and legislations

## **Legislation-** Laws of Parliament

Privacy Act  
Copyright

Possible specification-

‡

*The solution must comply with the Privacy Act and Copyright.*

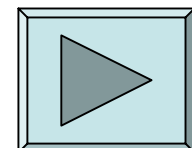
## **Regulations-** rules that are not laws, set by companies etc.

Katikati College, Board of Trustees, Policy and Procedure

Possible specification-

‡

*The solution must comply with any rules that may have been set by Katikati College and the Board of Trustees.*



# Research

codes and legislations continued

**Codes of practice-** guidelines (written or unwritten) of how a given profession goes about doing their work

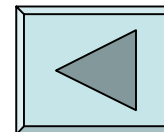
Design for 800x600 resolution

No dead ends

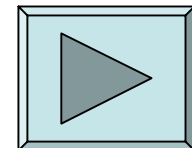
Home page not needing to be scrolled

Possible specifications-

- ‡ The solution must be designed for an 800x600 resolution.
- ‡ The solution must not have any dead ends.
- ‡ The solution's home page shouldn't have to be scrolled.



Research





# Research

## codes and legislations continued

**Codes of ethics-** guidelines of morals, values, ethics of a given profession does things

Don't give out personal details

Don't use obscene/offensive language or images

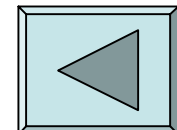
Possible specifications-

‡

The solution must not give out personal details

‡

The solution must not use obscene/offensive language or images.

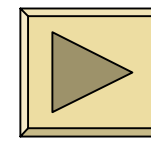


# Brief Development:

stakeholders

More specifications from Stakeholder Consultation (see Visual Diary)

- The solution must contain an even amount of text and pictures/diagrams.
- The solution must contain several small exercises **one at the end of each section and these will be interactive, doing them directly from the solution.** and one complete paper. **Used from a previous exam, which will be downloaded and printed out, with answers.**
- The solution's layout will be as shown in the Visual diary
- The solution must contain an animation of an organic molecule in the top left corner
- The solution must have an introduction page
- The solution must have a set layout, which is the same throughout
- The solution should link to other resources that could also help with Organic Chemistry
- The solution must introduce students to what Organic Chemistry actually is about
- The link to the extra paper must be clear and obvious in a place easily found



# Brief Development:

## brief refinement

### ***Conceptual Statement:***

The issue is that students require another form of revision for their Chemistry which can be accessed without too much trouble, at home, on a CD. I have chosen to create a solution which covers the Achievement Standard 2.5 Organic Chemistry.

### ***Specifications***

- ☞ It must have good use of color
- ☞ It must use some graphics
- ☞ It must have everything that the stakeholder wants
- ☞ It must be easy to understand
- ☞ It must be suitable for Year 12 students
- ☞ It must have labeled buttons
- ☞ It must have a clear navigation bar
- ☞ It must contain correct information
- ☞ The solution must be completed by the end of Term 3
- ☞ It must not contain copyrighted material

#### **Specifications from Research on the issue.**

- *The solution must familiarize students with typical questions that will be asked at achieved, merit and excellence levels.*
- *The solution must cover all topics in the achievement standard.*



# Brief Development:

## brief refinement

### *Conceptual Statement:*

The issue is that students require another form of revision for their Chemistry which can be accessed without too much trouble, at home create a solution which covers the Achievement Standard 2.5 Organic Chemistry.

### *Specifications*

- ☞ It must have reasonably good use of color
- ☞ It must use some graphics
- ☞ It must have everything that the stakeholder wants
- ☞ It must be easy to understand
- ☞ It must be suitable for Year 12 students
- ☞ It must have labeled buttons
- ☞ It must have a clear navigation bar
- ☞ It must contain correct information
- ☞ The solution must be completed by the end of Term 3
- ☞ It must not contain copyrighted material
- ☞ The solution must familiarize students with typical questions that will be asked at achieved, merit and excellence levels.
- ☞ The solution must cover all topics in the achievement standard.

### *RESEARCH EXISTING SOLUTIONS*

- *The solution mustn't have pages that need to be scrolled a lot - put it on a separate page if you must.*
- *The solution should **bold** or underline or use italics for KEY WORDS.*
- *The solution must be interactive.*



# Brief Development:

## brief refinement

### **Conceptual Statement:**

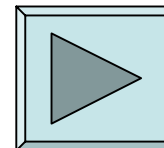
The issue is that students require another form of revision for their Chemistry which can be accessed without too much trouble, at home, on a CD. I have chosen to create a solution which covers the Achievement Standard 2.5 Organic Chemistry.

### **Specifications**

- ☞ It must have reasonably good use of color
- ☞ It must use some graphics
- ☞ It must have everything that the stakeholder wants
- ☞ It must be easy to understand
- ☞ It must be suitable for Year 12 students
- ☞ It must have labeled buttons
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- ☞ It must contain correct information
- ☞ The solution must be completed by the end of Term 3
- ☞ The solution must familiarize students with typical questions that will be asked at achieved, merit and excellence levels.
- ☞ The solution must cover all topics in the achievement standard.
- ☞ The solution mustn't have pages that need to be scrolled a lot - put it on a separate page if you must.
- ☞ The solution should **bold** or underline or use italics for KEY WORDS.
- ☞ The solution must be interactive.

### **RESEARCH CODES AND LEGISLATIONS**

- ‡ *The solution must comply with the Privacy Act and Copyright.*
- ‡ *The solution must comply with any rules that may have been set by Katikati College and the Board of Trustees.*
- ‡ *The solution must be designed for an 800x600 resolution.*
- ‡ *The solution's home page shouldn't have to be scrolled.*
- ‡ *The solution must not give out personal details*
- ‡ *The solution must not use obscene/offensive language or images.*



### **Conceptual Statement:**

The issue is that students require another form of revision for their Chemistry which can be accessed without too much trouble, at home, on a CD. I have chosen to create a solution which covers the Achievement Standard 2.5 Organic Chemistry.

### **Specifications**

- ☞ It must have good use of color
- ☞ It must use some graphics, relating to Organic Chemistry
- ☞ It must be easy to understand - clear text (Garamond) and diagrams, easy to navigate around
- ☞ It must be suitable for Year 12 students
- ☞ It must have labeled buttons
- ☞ It must have a navigation bar which links clearly to the four different topics in Organic Chemistry
- ☞ The solution must be accurate
- ☞ The solution must be completed by the end of Term 3
- ☞ The solution must familiarize students with typical questions that will be asked at achieved, merit and excellence levels.
- ☞ The solution must cover all topics in the achievement standard. These are - Alkanes and Haloalkanes, Alkenes Polymers and Alkynes, Alcohols, and Carboxylic Acids Esters and Soaps.
- ☞ The solution mustn't have pages that need to be scrolled a lot - put it on a separate page if you must.
- ☞ The solution should **bold** or underline or use italics for KEY WORDS.
- ☞ The solution must be interactive.
- ☞ The solution must comply with the Privacy Act and Copyright.
- ☞ The solution must comply with any rules that may have been set by Katikati College and the Board of Trustees.
- ☞ The solution must be designed for an 800x600 resolution.
- ☞ The solution must not have any dead ends.
- ☞ The solution's home page shouldn't have to be scrolled.
- ☞ The solution must not give out personal details
- ☞ The solution must not use obscene/offensive language or images.
- ☞ The solution must contain an even amount of text and pictures/diagrams.
- ☞ The solution must contain several small exercises and one complete paper.
- ☞ The solution's layout will be as shown in the Visual diary
- ☞ The solution must contain an animation of an organic molecule in the top left corner
- ☞ The solution must have an introduction page
- ☞ The solution must have a set layout, which is the same throughout
- ☞ The solution should link to other resources that could also help with Organic Chemistry
- ☞ The solution must introduce students to what Organic Chemistry actually is about
- ☞ The link to the extra paper must be clear and obvious in a place easily found

# Brief refinement



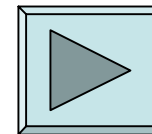
### ***Conceptual Statement:***

The issue is that students require another form of revision for their Chemistry which can be accessed without too much trouble, at home, on a CD. I have chosen to create a solution which covers the Achievement Standard 2.5 Organic Chemistry.

### ***Specifications***

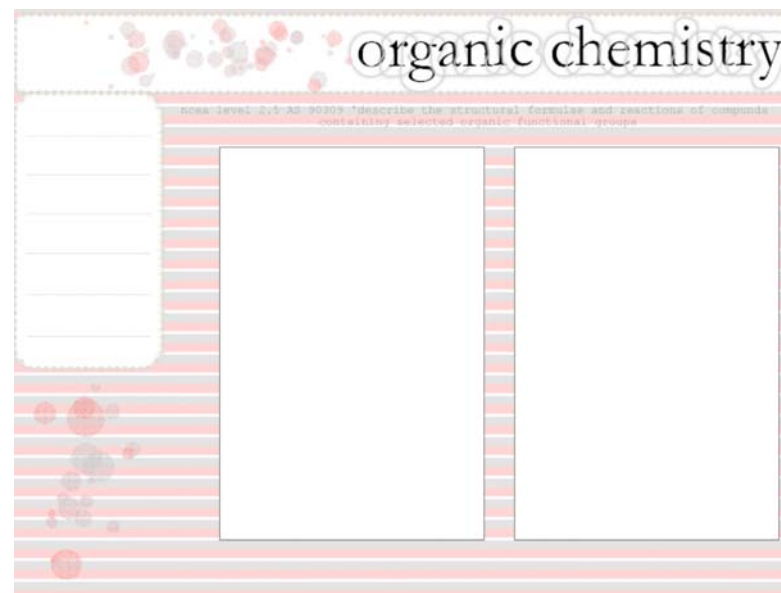
- The color theme should be pink and grey
- It must use some graphics, relating to Organic Chemistry such as molecules, plastics, products of organic chemistry, diagrams
- It must be easy to understand - clear text (Garamond) and diagrams, easy to navigate around by having clearly labeled buttons
- It must be suitable for Year 12 students, using suitable vocabulary – not too simple, yet not so advanced that it can't be understood easily.
- It must have a navigation bar which links clearly to the four different topics in Organic Chemistry, these being – alkanes and haloalkanes, alkenes polymers and alkynes, alcohols, and carboxylic acids esters and soaps.
- The solution must be accurate – the information mustn't be incorrect and links must all be correct.
- The solution must be completed by the end of Term 3
- The solution must familiarize students with typical questions that will be asked at achieved, merit and excellence levels.
- The solution mustn't have pages that need to be scrolled a lot - put it on a separate page if you must.
- The solution should **bold** or underline or use italics for KEY WORDS.
- The solution must be interactive, e.g. having small tests in it
- The solution must comply with the Privacy Act; it must not give out any personal details.
- The solution must comply with Copyright; all information must be either in my own words or I must have proof of permission to use it.
- The solution must comply with any rules that may have been set by Katikati College and the Board of Trustees.
- The solution must be designed for an 800x600 resolution.
- The solution must not have any dead ends.
- The solution's home page shouldn't have to be scrolled.
- The solution must not use obscene/offensive language or images.
- The solution must contain an even amount of text and pictures/diagrams.
- The solution must contain several small exercises, one at the end of each section and these will be interactive, doing them directly from the solution.
- The solution must contain one complete paper used from a previous exam, which will be downloaded and printed out, with answers.
- The solution must contain an animation of an organic molecule in the top left corner
- The solution must have an introduction page
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- The solution should link to other resources that could also help with Organic Chemistry
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# Final brief



# Final brief continued

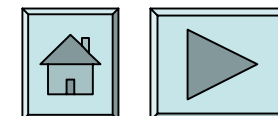
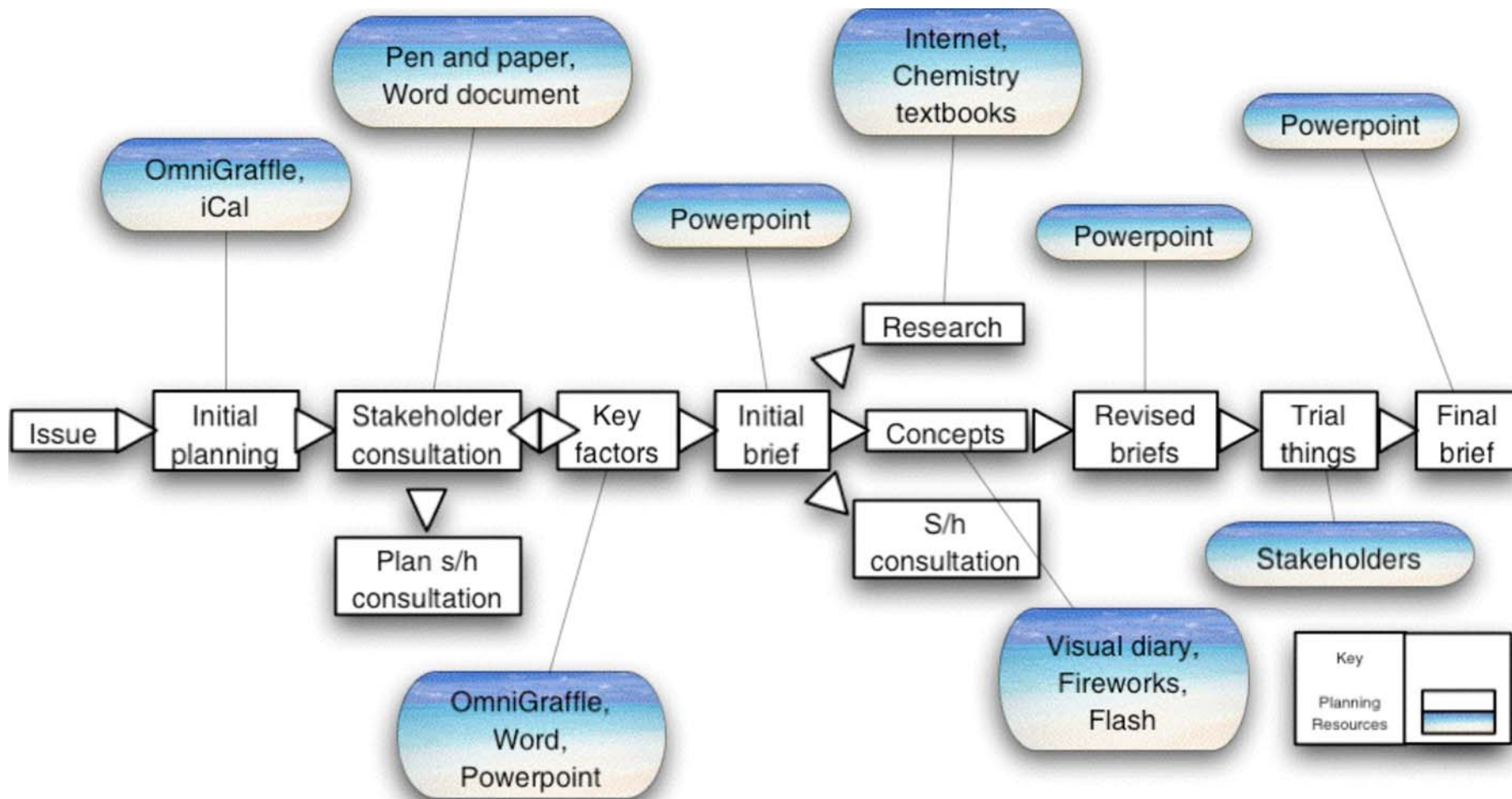
The solution's layout will be as shown:





Key stages and resources:

# Planning



# Planning: milestones

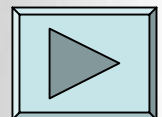
First major stakeholder consultation: Friday 12th May

Formulate an initial brief - by Thursday 18th May

Final brief complete by - Thursday 1st June

Complete Conceptual designs by - Monday 5th June

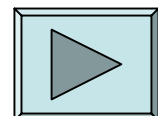
Complete modelling by - Monday 12th June



May 2006						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
30 • Decided on Issue during the holiday.	1	2 • First day of Term 2 • No ICT	3 • Intro to 2.1	4 • Intro to 2.1	5 • Begin	6
7	8 • Planning and identifying stakeholders	9 • No ICT	10 • Planning	11 • Planning	12 • Stakeholder consultation	13
14 • Key factors	15 • Key factors	16 • Key factors	17 • No ICT	18 • Initial Brief	19 • Initial Brief	20
21 • Research	22 • Research	23 • Research	24 • Specifications	25 • No ICT	26 • Specifications	27
28 • Conceptual designs	29 • Conceptual designs	30 • Conceptual designs	31 • B refinement	1 • B refinement	2 • No ICT	3
4 • No school • QUEENS BIRTHDAY	5 • Final brief	6 • Final brief	7 • Final brief	8 • Modelling	9 • Modelling	10
11 • Anything	12 • 2.1 DUE	13	14	15	16	17

# Planning: continued

This is the first plan I created on iCal.

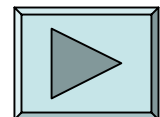


May 2006

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
30 • Decided on Issue during the holiday.	1	2 • First day of Term 2 • No ICT	3 • Intro to 2.1	4 • Intro to 2.1	5 • Begin	6
7	8 • Planning and identifying stakeholders	9 • No ICT	10 • Planning	11 • Planning	12 • Stakeholder consultation	13 • S/h cons. backup
14 • Review s/h consultation	15 • Key factors	16 • Key factors	17 • No ICT • Catchup	18 • Initial Brief	19 • Initial Brief • Start Research	20
21	22 • Research	23 • Research • Specifications	24 • Specifications	25 • No ICT	26 • Specifications	27
28	29 • Conceptual designs	30 • Conceptual designs	31 • B refinement	1 • B refinement	2 • No ICT	3

## Planning: continued

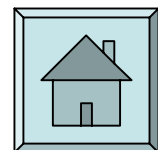
This is my revised planning which I did after realizing my stakeholders might not be available on Friday. On the day I didn't have ICT I put a catch-up day so that I could do work at home if I needed to, especially on stakeholders. I realized that the initial brief wouldn't take two periods so I changed to start my research earlier, therefore starting on my specifications earlier as well. This also gives me more time on them if I need it.



21	22	23	24	25	26	27
• Research	• Research • Specifications	• Specifications	• No ICT • Catchup	• Specifications • Conceptual designs	• S/h cons. on CDs	
28	29	30	31	1	2	3
• Conceptual designs	• Conceptual designs	• B refinement	• B refinement	• No ICT • B refinement at home		
4	5	6	7	8	9	10
• No school • QUEENS BIRTHDAY	• Final brief • Modeling	• Final brief • Modeling	• Modelling	• Modelling		
11	12	13	14	15	16	17
• Anything	• 2.1 DUE					

## Planning: continued

This is my second revised planning. Having only a few weeks left until it is handed in, I needed to make sure that I would finish everything in time. I did this by putting in catch-up and extra times at home to work on. I decided that starting on the conceptual designs as early as possible would be good, so I could get the stakeholder consultation over with and work on refining my brief. This is why I put in conceptual designs on the 26th, as specifications wouldn't take that long either. In case I ran out of time on brief refinement (also research), I planned to do brief refinement at home if I needed to. I realized that modeling would take much longer than a couple of days, as I'm not too familiar with flash, so I added in two extra days on modeling just in case.



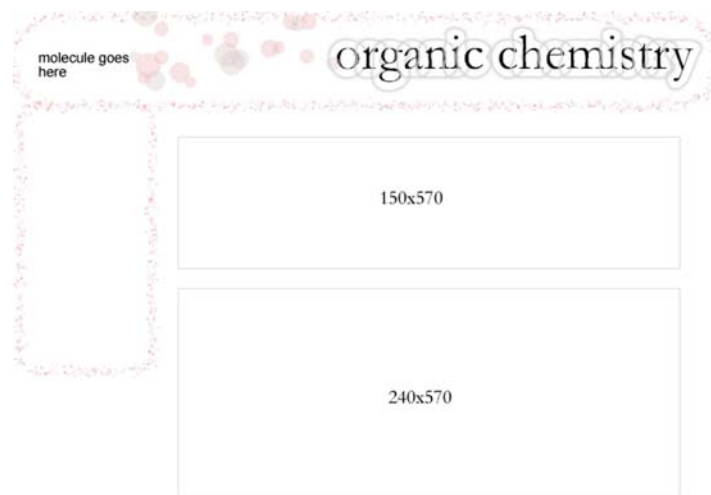
# Conceptual Design

For development on the Conceptual design, please look in my Visual Diary.

Modeling

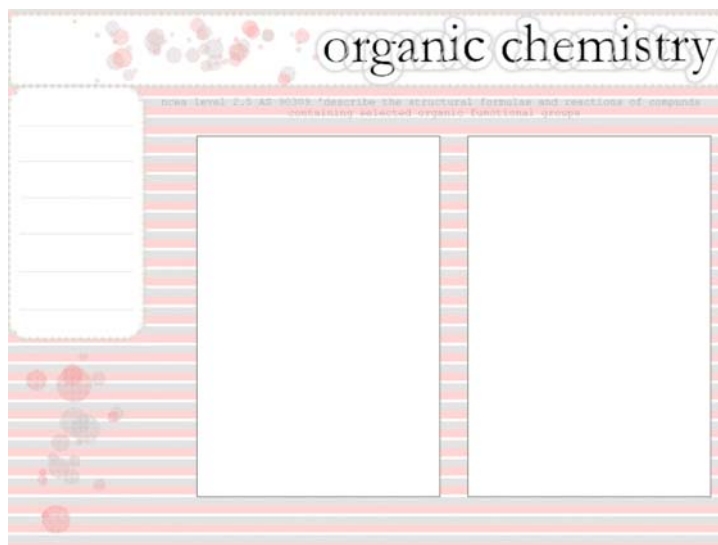


# Conceptual design: modeling



This was the first model of a home page I came up with (see modeling folder for all the models). I haven't put the background in this as there was no point because stakeholders decided that the outline for the header and the navigation bar was too flimsy and should be more solid. Preferably not pink.



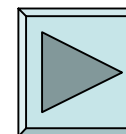


# Conceptual design: modeling

Instead one of my stakeholders came up with this kind of outline, My stakeholders liked this one much better.

These are the two different main layouts of the pages.

Please look at my flash file for the main model.





# Conceptual design: modeling

## Fitness for purpose

The model I created demonstrates the fitness for purpose to key stakeholders and addresses their concerns. I have checked through my specifications and it complies with all of them as a model.

