

Addendum 1 Questionnaire

Questionnaire: Tutorial on Design Theory “Design in Action” Vraelys: Tutoriaal oor Ontwerpteorie “Design in Action”	
Question 1/ Vraag 1	What did you like most about the tutorial?/Wat omtrent die tutoriaal het jy die meeste van gehou?
Response/Respons	
Question 2/Vraag 2	What would you have liked different in the tutorial?/Wat omtrent die tutorial sou jy anders wou hê?
Response/Respons	
Question 3/Vraag 3:	What did you like least about the tutorial?/Wat omtrent die tutorial het jy minste gehou?
Response/Respons	
Question 4/Vraag 4	Did you understand the language and terminology used in the tutorial?/Kon jy die taal en die terminologie in die tutoriaal gebruik, verstaan?
Response/Respons	
Question 5/ Vraag 5	Would you prefer to have had exposure to this tutorial at the beginning of your module on graphic design?/Sou jy dit verkies om blootstelling aan hierdie tutoriaal te gehad het aan die begin van die module oor grafiese ontwerp?
Response/Respons	
Question 6/ Vraag 6	Which aspect of the design theory did you understand the least before working through the tutorial?/Watter aspek van die ontwerpteorie het jy die minste verstaan voordat jy deur die tutoriaal gewerk het?
Response/Respons	
Question 7/ Vraag 7	Which aspect of the design theory did you understand best before covering the tutorial?/Watter aspek van die ontwerpteorie het jy die meeste verstaan voordat jy deur die tutoriaal gewerk het?
Response/Respons	
Question 8/Vraag 8	Which aspect of the design theory did you learn best as a result of exposure to the tutorial?/Van watter aspek van die ontwerpteorie het jy die meeste geleer deur jou blootstelling aan die tutoriaal?
Response/Respons	
Question 9/Vraag 9	Which aspect of the design theory did you learn least as a result of exposure to the tutorial?/Van watter aspek van die ontwerpteorie het jy die minste geleer deur jou blootstelling aan die tutoriaal?
Response/Respons	
Question 10/Vraag 10	Did you manage to complete the exercise in time?/Kon jy klaarkry met die oefening in die gegewe tyd?
Response/Respons	

Addendum 2 Classes of reactions: responses to the questionnaire

1. Affective reaction to direct questions		
Participant	Positive reaction	Negative reaction
Participant 9		<p>Question 4: "Could you understand the language and terminology used in the tutorial?"</p> <p>Reply: "Not clearly"</p> <p>Question 11: "Did you manage to complete the tutorial and the exercise in time? If not, indicate how many questions did you manage to complete"</p> <p>Reply: "No"</p>
Participant 14	<p>Question 4: "Could you understand the language and terminology used in the tutorial?"</p> <p>Reply: "Ja" translated Yes</p> <p>Question 11: "Did you manage to complete the tutorial and the exercise in time? If not, indicate how many questions did you manage to complete"</p> <p>Reply: "Ja, dit het sowat 4 ure se harde werk gekos" translated Yes, it took approximately 4 hours' hard work</p>	
Participant 21	<p>Question 4: "Did you manage to complete the tutorial and the exercise in time? If not, indicate how many questions did you manage to complete"</p> <p>Reply: "I completed all of them in my own time, but was time consuming, maybe less designs to explain"</p> <p>Question 11: "Could you understand the language and terminology used in the tutorial?"</p> <p>Reply: "Yes, very straight forward and easily understood. Maybe a little more pictures to show"</p>	

Addendum 2 (cont)

2. Affective reaction to indirect questions		
Participant	Positive reaction	Negative reaction
Participant 9	<p>Question 1: “What did you like most about the tutorial?”</p> <p>Reply: “Dit was maklik om meet te werk en ek kon dit op my eie tyd doen” translated <i>It is easy to work with and you can work at your own pace</i></p>	<p>Question 2: “What would you have liked different in the tutorial?”</p> <p>Reply: <i>“For the pictures to be enlarged”</i></p> <p>Question 3: “What did you like least about the programming?”</p> <p>Reply: “It is too slow to open from the site”</p>
Participant 14	<p>Question 1: “What did you like most about the tutorial?”</p> <p>Reply: “Dit was baie “user-friendly”, daar is niks rêrig snaaks aan die program nie.” translated <i>It was very user-friendly, there is nothing really strange to the program</i></p>	<p>Question 2: “What would you have liked different in the tutorial?”</p> <p>Reply: “Die internet links vat ‘n rukkie om oop te maak” translated <i>The Internet links take a while to open</i></p> <p>Question 3: What did you like least about the tutorial?</p> <p>Reply: “Daar was nie rêrig iets nie” translated There really wasn’t anything</p>
Participant 21	<p>Question: “What did you like most about the tutorial?”</p> <p>Reply: <i>“It was easily accessible and easy to work with”</i></p>	<p>Question: “What would you have liked different in the tutorial?”</p> <p>Reply: <i>“Maybe the fonts on some parts of the program. Some of the writing was too big or too small”</i></p> <p>Question: “What did you like least in the tutorial?”</p> <p>Reply: <i>“The organisation is a little unorganised”</i></p>

3. Utility judgements in response to the questionnaire		
Participant	Value of particular slides	Relevance of the tutorial
Participant 9	<p>Question 9: Of which aspect of the design theory in the tutorial did you understand the least?</p> <p>Reply: <i>“Nothing”</i></p> <p>Question 12: Of which aspect of the design theory did you learn the most through the tutorial?</p> <p>Reply: <i>“Balance and illusion of motion”</i></p>	<p>Question 5: “Would you prefer to have had exposure to this tutorial at the beginning of your module on graphic design?”</p> <p>Reply: <i>“Yes – because its easier to understand visual information”</i></p>

Addendum 2 (cont)

Participant 14	<p>Question 9: Of which aspect of the design theory in the tutorial did you understand the least? Reply: "Niks"</p> <p>Question 12: Of which aspect of the design theory did you learn the most through the tutorial? Reply: "Alles" translated Everything</p>	<p>Question 5: "Would you prefer to have had exposure to this tutorial at the beginning of your module on graphic design?" Reply: "Nee, almal wat CIL gehad het in die 1ste jaar hoort te weet hoe om die program te werk" translated No, everyone who had CIL in the first year, ought to know hoe to work the program</p>
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3. Utility judgements in response to the questionnaire

Participant	Value of particular slides	Relevance of the tutorial
Participant 21	<p>Question 9: Of which aspect of the design theory in the tutorial did you understand the least? Reply: <i>"Unity and how to achieve it in a design"</i></p> <p>Question 12: Of which aspect of the design theory did you learn the most through the tutorial? Reply: "The design elements and principles. Useful"</p>	<p>"Would you prefer to have had exposure to this tutorial at the beginning of your module on graphic design?" Reply: <i>"Yes, maybe a lesson concentrating on this, maybe also not on own time but, during class time"</i></p>

Addendum 3 The semi-structured interview

Interview: Tutorial on Design Theory “Design in Action” Onderhoud: Tutoriaal oor Ontwerpteorie “Design in Action”	
Question 1:	“Did the fact that the tutorial took such a long time to work through cause you to rush through the exercise?”
Question 2:	Do you think that some parts of the content were covered in more detail than others? If so, which ones?
Question 3:	Were there any specific terms used that you did not understand?
Question 4:	Were there any parts of the content that you would like different in order to make you understand the specific principle or element better?
Question 5:	Do you think it would help you understand the content better if there were help available when you got stuck with an answer?
Question 6:	Did it frustrate you much that there were no links in the tutorial to help you find specific principles or elements quicker instead of going back and forth all the time looking for something specific?

Addendum 4 Responses to the interview

Interview Participant 9
<p>Question 1 “Teen die einde het ek afgerammel en het ek nie tyd gehad om terug te gaan na die wat ek nie verstaan het nie. <i>In the end I did rush and did not have time to go back to the ones I did not understand.</i></p>
<p>Question 2 “Ja, party het meer prentjies gehad as ander, en party se prentjies was groter as ander s'n. Ek kon nie altyd uitmaak wat die elemente op die klein prentjies was nie. Dit het my deurmekaar gemaak. Party slides het meer geskryf op gehad as ander.” <i>Yes, some had more pictures than others, and some pictures were bigger than others. I could not always identify the elements on the small pictures. That was confusing. Some slides had more text on than others.</i></p>
<p>Question 3 “Ek dink ek verstaan balans want daar was baie slides daaroor. Maar toe ek die vrae in die oefening moes doen was ek nie seker of my antwoorde reg was nie.” <i>I thought I understood balance because there were many slides covering it. But when I had to answer the questions, I wasn't sure I had the correct answers.</i></p>
<p>Question 4 “Daar kan meer prentjies wees en hulle moenie te klein wees nie.” <i>I would like more pictures and they should not be too small.</i></p>
<p>Question 5 “Ja, ek din dit sou gehelp het. Dit kan ook tyd spaar.” <i>Yes, I think it would. It could save time also</i></p>
<p>Question 6 “Nee, ek het nie toe so daaraan gedink nie.” <i>No. I didn't think of that at the time.</i></p>
Interview Participant 14
<p>Question 1 “Nee, ek het ewe veel tyd gevat vir al die vrae.” <i>No, I spent equal time one each question.”</i></p>
<p>Question 2 “Ek dink meer aandag moet geskenk word aan die ‘design elements’.” <i>I think more attention should be given to the design elements.</i></p>
<p>Question 3 “Nee, ek het alles verstaan.” <i>No, I understood everything.</i></p>
<p>Question 4 “Nee, ek kan nie so sê nie.” <i>No, I can not say so.</i></p>

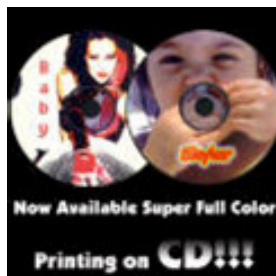
Addendum 4 (cont)

<p>Question 5 “Ja, dit sou baie gehelp het. Ek dink ook dit so goed gewees om dadelik te weet of’n mens se antwoord reg is.” <i>Yes, it would help a lot. I also think it would be nice to know if your answer is correct straight away.</i></p>
<p>Question 6 “Dit was frustrerend, maar dit het ook partykeer gehelp om iets te sien wat jy nie juis soek nie, maar vir ‘n ander vraag gehelp het.” <i>Yes, it was frustrating, but sometimes something you did not look for at the moment helped with answering another question.</i></p>
<p>Interview Participant 21</p>
<p>Question 1 “Not really – no. But I do think it should have been scheduled for a separate session in the lab. We shouldn’t have tried to do it all in one session”.</p>
<p>Question 2 “It would be useful if there were explanations of some examples. To guide us in the technique of answering these type of questions.</p>
<p>Question 3 “No, everything was understandable.”</p>
<p>Question 4 “No.”</p>
<p>Question 5 “Yes, it would be reassuring. Sometimes you just didn’t know if you are on the right track or not. You know, everything is so open-ended.”</p>
<p>Question 6 “Yes, it could save a lot of time.”</p>

Addendum 5 The exercise

Design Problem Solving

Question 1: Name the way in which Unity is achieved here. Describe the elements used to achieve it.



Design Problem Solving

Question 2: Name the type of Balance achieved in this design. Describe the elements used to achieve this type of Balance



Addendum 5 (cont)

Design Problem Solving

Question 3: Critically discuss the way in which Proportion and Tonal Value acts to achieve Balance in this design.



Design Problem Solving

Question 4: Describe how Unity is achieved in this design.



Addendum 5 (cont)

Design Problem Solving

Question 5: Discuss the way in which emphasis on Unity is achieved in all three designs.



Design Problem Solving

Question 6: Discuss all the elements applied to achieve Unity in this design.



Addendum 5 (cont)

Design Problem Solving

Question 7: Discuss the elements used to achieve contrast in this design.



Design Problem Solving

Question 11: Describe how line is used to guide the viewer's eye through this design.



Addendum 5 (cont)

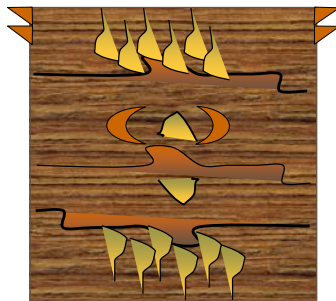
Design Problem Solving

Question 12: Discuss how the elements of Texture and Proportion bring interest to this design



Design Problem Solving

Question 13: Name and discuss the element used to achieve rhythm in this design.



Addendum 5 (cont)

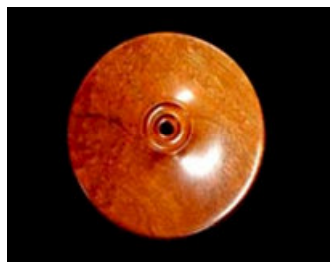
Design Problem Solving

Question 14: Discuss the type of Texture in this image.



Design Problem Solving

Question 15: Discuss the type of Balance in this three dimensional design of a wooden bowl.



Addendum 6 The exercise –analysis of responses

Participant 9 - Exercise		
Constructs	Response	Comments/Interpretation
Principle Unity Question 1 “Name the way in which unity is achieved here. Describe the elements used to achieve it”.	“Unity is achieved in a way that the pictures in it are the same – both CD and both have pictures of people – repetition and continuation”.	Principle understood: pictures are the “same” Technique used: repetition – not “continuation” Elements used: “pictures”.
Question 4 Describe how unity is achieved in this design.	“Because the cosmetic bottles or tubes – with small triangles (repeatedly). Thus proximity and similarity unify a design. Repetition and continuation are the elements.	Technique: “how”? “Repetition and continuation” Principle understood? “Proximity and similarity” correct Elements – incorrectly identifies “repetition and continuation” – are in fact techniques – not elements.
Question 5 Discuss the way in which emphasis on unity is achieved in all three designs.	“Unity is achieved in a way that they are all ties, they are all striped”.	Technique: Not discussed Principle understood: unclear Elements: “stripes” – correct.
Question 6: Discuss all the elements applied to achieve unity in this design.	“Repetition and continuation e.g. elephants and flowers. Unity with variety”.	Technique: “repetition” correct “continuation” incorrect Principle not understood: “unity with variety” – this design is “emphasis on unity” Elements: refers to “elephants and flowers” – meaning, “shape?”
Question 8 “Name the dominant unifying element used in this design”.	“Direction – colour – angle”.	Element identified – colour “Direction” and “angle” not relevant to creating unity here. Not sure if she guessed.
Balance Question 2 “Name the type of balance achieved in this design. Describe the elements used to achieve this type of balance”.	“Symmetrical balance – shapes are repeated in the same positions on either side of a central vertical axis”.	Principle not understood: “symmetrical balance” incorrect “similar objects ... Technique used: Elements used: does not describe which elements.
Question 3 “Critically discuss the way in which proportion and tonal value acts to achieve balance in this design”	“Small words against the big word shows how relative size is”	Technique: Understand technique used: dissimilarity of “big” against “small” indicates understanding of proportion. Principle not understood: Does not refer to “balance” at all. Does not clarify meaning and application of “tonal value” Does not say what the writing is balanced with.

Addendum 6 (cont)

Participant 9 – Exercise		
Construct	Response	Comments/Interpretation
Question 15 “Discuss the type of balance in this three dimensional design of a wooden bowl”	“Shapes are repeated in the same positions on either side of a central vertical axis:	Principle not understood: does not identify it at all, i.e. “symmetrical balance”, but repeats correct definition according to tutorial. Not sure if understands. No reference to specifics on the designs, e.g. circle/radiation.
Technique Contrast Question 7 “Discuss the elements used to achieve contrast in this design”.	“Repetition – continuation-illusion of motion”.	Principle understood: “contrast” not understood Elements mentioned not relevant to the design.
Element Texture & Proportion to achieve Contrast Question 12 “Discuss how the elements of texture and proportion bring interest to this design”.	“Small human figure against the huge sunflower shows how relative the concept of size is. The dark areas represent smoothness and dark represents roughness”.	Elements “proportion” correctly identified as “small” against “huge” as relativity of size in the design. “Texture” is not related to the design specifically. Participant gives definitions according to tutorial but does not identify “texture” on the design for what it is, i.e. dark spots in the middle of the flower in interesting contrast with lines in the petals.
Texture Question 14 “Discuss the type of texture in this image”.	“Tactile texture. It can be felt”.	Principle understood: Correctly identifies “tactile texture” Not sure if understands why – does not refer to anything specific in the design - “.can be felt” is repetition of definition in tutorial.
Illusion of movement Question 9 “Discuss the way in which the illusion of movement is created in this design”.	“The objects in the slide looks like they are moving and are repeated.	Technique: “repeated” correct Principle understood – not clearly explained.
Line Question 11 “Describe how line is used to guide the viewer’s eye through this design”.	“The line represents the ends of the objects and their shapes”.	Defines “line” correctly according to tutorial but does not understand its function.
Rhythm Question 14 “Name and discuss the element used to achieve rhythm in this design”.	“There seemed to some movement and repetition – repetition”.	Technique: “Repetition” Principle understood: not clear if understands – does not discuss how repetition is applied to achieve movement.

Addendum 6 (cont)

Construct	Response	Comments/Interpretation
Technique Repetition Question 10 “Discuss the role repetition plays in this design”.	“Repetition play role in achieving unity and balance”.	Principles achieved: unity and balance correct – does not discuss why – not sure if P9 understands how and why it is done.
Participant 14 - Exercise		
Construct	Response	Comments/Interpretation
Principle Unity Question1 “Name the way in which unity is achieved here. Describe the elements used to achieve it”.	“The circular shape Repetition Continuation”.	Technique: “repetition” correct; “continuation” incorrect Principle understood: yes Element identified: “shape” correct.
Question 4 Describe how unity is achieved in this design.	“Repetition and continuation. Proximity and similarity unify a design Proximity – putting elements close together”.	Not sure if understands – does not refer to specifics in the design – quotes definition in tutorial correctly.
Question 5 Discuss the way in which emphasis on unity is achieved in all three designs.	“Repetition. Continuation. Contain ordered quality of unity and the lively quality of variety”.	Not sure if understands – does not refer to specifics in the design – wrongly identified – quotes wrong principle (should be emphasis on variety).
Question 6: Discuss all the elements applied to achieve unity in this design.	“Repetition. Some things repeat in various parts of design to relate to each other. (Proximity, shape, continuation)	Does not say which “things” repeat. Does not say which shapes are in proximity. “Continuation” incorrect.
Technique Repetition Question 10 “Discuss the role repetition plays in this design”	Not answered.	Not understood.
Question 8 “Name the dominant unifying element used in this design”.	“Focal point to catch attention”.	“Unifying element” not understood.
Balance Question 2 “Name the type of balance achieved in this design. Describe the elements used to achieve this type of balance”.	“Asymmetrical balance is achieved with dissimilar objects that have equal visual weight or eye attraction”.	Technique: not identified Principle understood: type correctly identified “asymmetrical balance”. Not sure if understands – does not refer to specifics in the design – quotes definition in tutorial correctly.
Question 3 “Critically discuss the way in which proportion and tonal value acts to achieve balance in this design”.	“Proportion refers to relative size, size measured against other elements”.	Technique: not identified Principle not understood: does not relate elements to “balance” Elements understood: not sure – quotes only partially correctly according to tutorial.
Question 15 “Discuss the type of balance in this three dimensional design of a wooden bowl”.	Not answered.	

Addendum 6 (cont)

Participant 14 - Exercise		
Construct	Response	Comments/Interpretation
Technique Contrast Question 7 “Discuss the elements used to achieve contrast in this design”	“Size, overlapping, perspective”	None correct
Illusion of movement Question 9 “Discuss the way in which the illusion of movement is created in this design”.	“Figure repeated. Fuzzy outlines. Multiple images”.	Correctly quoted from tutorial. Does not refer to anything specific in the design – not sure if understood.
Element Line Question 11 “Describe how line is used to guide the viewer’s eye through this design”.	“Lines of keyboard takes they eye to the computer. A line is created by movement”.	Understands what happens visually in this design _ line guiding eye’s “movement” from keyboard to computer. “A line is created by movement” not relevant to the question.
Texture & Proportion Question 12 “Discuss how the elements of texture and proportion bring interest to this design”.	“Unrealistic proportions of the small human figure against the huge flower size. It creates surface quality”.	“Proportion” correctly related to “small human figure” and “huge flower”. “Flower” shows “surface quality” but NOT that of figure. Not sure participants understands the effect of the texture – i.e. tactile quality.
Texture Question 14 “Discuss the type of texture in this image”.	“Visual texture refers to the surface quality of objects”.	Type of texture incorrectly identified. Quotes wrong definition from tutorial. Does NOT understand.
Rhythm Question 14 “Name and discuss the element used to achieve rhythm in this design”.	“Movement of the viewers eye. Design principle is based on repetition”.	Correctly quoted from tutorial. Does not refer to anything specific in the design – not sure if understood.

Participant 21 - Exercise		
Construct	Response	Comments/Interpretation
Principle Unity Question1 “Name the way in which unity is achieved here. Describe the elements used to achieve it”.	“The objects look like they belong together. There is repetition of the shape of the c.d. Having the same texture and shape in the same direction”.	Principle understood: “belong together”, “repetition”, “same” Technique used: repetition Elements used: Shape.
Question 4 Describe how unity is achieved in this design.	“By repetition and continuation. The proximity and similarity unifying the design. Unity is achieved by shape, colour, direction and the angle of the containers”.	Technique: “how”? “Repetition and continuation” Principle understood? Yes – “proximity and similarity” Elements identified? Shape, colour, angle.

Addendum 6 (cont)

Construct	Response	Comments/Interpretation
Question 5 Discuss the way in which emphasis on unity is achieved in all three designs.	"The design contains both the ordered quality of unity and the lively quality of variety. The design encompasses the wide variety of extremely different visual images".	Technique: Not discussed Principle understood: No P21 refers to unity with variety and not to emphasis on unity Elements: None identified.
Question 6 Discuss all the elements applied to achieve unity in this design.	"You can see the objects belong together, through visual connection. There is repetition, repeating pictures to relate to each other".	Technique: repetition, Principle understood: yes "visual connection" Elements: none given.
Technique Repetition Question 10 "Discuss the role repetition plays in this design".	"Something repeats in various parts of the design to relate the parts to each other – same shape and texture are repeated".	Technique understood: repetition Principle achieved: not named as "unity" – but "relate parts" implies it Elements identified: "shape and texture" correct.
Question 8 "Name the dominant unifying element used in this design".	"Emphasis on unity".	Element not identified – colour Equated "emphasis on ..." with "dominant" Question not understood.
Principle Balance Question 2 "Name the type of balance achieved in this design. Describe the elements used to achieve this type of balance".	"This design has asymmetrical balance, having dissimilar objects that have equal visual weight or equal eye attraction".	Principle understood: asymmetrical balance "dissimilar objects ... equal visual weight" Technique used: correctly "dissimilarity", "visual weight" Elements used: does not describe which elements.
Question 3 "Critically discuss the way in which proportion and tonal value acts to achieve balance in this design".	"Tonal value helps with contrast without disturbing unity. The writing takes up most of the space overwhelming the design. This balances the design as asymmetrical balance".	Technique: Understand technique used "space overwhelming by..." Principle understood: Correctly identifies "asymmetrical balance" indicates understanding of "proportion". Does not clarify meaning and application of "tonal value" Does not say with what the writing is balanced.
Construct	Response	Comments/Interpretation
Question 15 "Discuss the type of balance in this three dimensional design of a wooden bowl"	No answered	

Addendum 6 (cont)

<p>Technique Contrast Question 7 “Discuss the elements used to achieve contrast in this design”.</p>	<p>“Symmetrical balance. Like shapes are repeated in same positions on either side of central vertical axis. Distributing visual weight equally”.</p>	<p>Principle understood: identified correctly as “symmetrical balance”, repeats correct definition according to tutorial. Not sure if understands. No reference to specifics on the designs, e.g. circle/radiation</p>
<p>Illusion of movement Question 9 “Discuss the way in which the illusion of movement is created in this design”.</p>	<p>“The horizontal line across the vertical lines creates visual tension, preventing visual boredom”.</p>	
<p>Element Line Question 11 “Describe how line is used to guide the viewer’s eye through this design”.</p>	<p>“The figure has been repeated with a fuzzy outline of multiple images”.</p>	<p>Technique + elements: “repeated” “fuzzy outline” “multiple images” Principle understood.</p>
<p>Texture & Proportion Question 12 “Discuss how the elements of texture and proportion bring interest to this design”.</p>	<p>Not answered.</p>	<p>Function of “line” not understood.</p>
<p>Texture Question 14 “Discuss the type of texture in this image”.</p>	<p>“Texture: it looks as if you can actually touch it. The little man that is small emphasises the sizes and proportions of objects compared to each other”.</p>	<p>Elements “texture” and “proportion” not recognised/identified on the design for what it is, i.e. dark spots in the middle of the flower in interesting contrast with lines in the petals.</p>
<p>Rhythm Question 14 “Name and discuss the element used to achieve rhythm in this design”.</p>	<p>“Visual texture, created by varying the pattern of light and dark areas on the object. This gives the impression of depth to the image</p>	<p>Principle not understood. “Visual texture” not correct. Participant repeats definition on tutorial of incorrect principle.</p>
	<p>“Repetition is the element used to achieve rhythm. Repetition is an element of visual unity. Giving the design movement of the viewer’s eye”</p>	<p>Technique: “Repetition” Principle understood: partly – “repetition” – does not sufficiently explain that repetition must form a pattern in order to create rhythm.</p>

Addendum 7 The exercise – researcher’s analysis of designs

1. Question 2

“Name the type of balance achieved in this design. Describe the elements used to achieve this type of balance”.



1.1 The criterion

Participants had to do two things in order to answer the question correctly. First, they participants had to name the type of balance correctly, i.e. asymmetrical balance. Second, they had to describe all the design elements used to achieve it.

The tutorial explains that symmetrical balance is achieved when like shapes are repeated in the same positions on either side of the central vertical and/or horizontal axes. Asymmetrical balance is achieved when dissimilar objects on the format have equal visual weight or equal eye attraction.

Multiple possible combinations of design elements could be identified as contributing to the achievement of asymmetrical balance. However, participants had to correctly explain their understanding or conceptualizing of the visual and spatial effect the arrangement of the elements would have on the equal distribution of the elements around the central axes.

1.2 Analysis of the constructs in the question

The image in question 2 illustrates how dissimilar objects with equal visual weight are used has to achieve asymmetrical balance on the format. The designer used the elements of dissimilar size and tonal value to achieve asymmetrical balance. The two organic shapes appear to be the exactly same, but the difference in size or scale and tonal value distribute the visual weight around the vertical and horizontal axes of the format. The shape on the left of the vertical axis is much bigger, but much lighter in tonal value than the shape on the right. The designer furthers used the large white text on

Addendum 7(cont)

top of the big shape to even further lighten the tonal value, reducing the visual weight equal to that of the small, dark shape on the right. Objects around the horizontal axis are also placed in such a way that asymmetrical balance is achieved. The big darker shape in the top left quarter is visually balanced with the lighter empty space on the right top quarter. The whole top half is much darker in tonal value than the bottom half, but balance is achieved by the equal visual weight of the tonal value of the dark top with the light bottom.

2. Question 9

“Discuss the way in which the illusion of movement is created in this design”

**2.1 The criterion**

Participants had to identify the techniques used to achieve the design principle of illusion of motion in order to answer the question correctly. They were not required to identify the design elements used in the design, but those participants who did refer to e.g. line, shape, size, colour, texture correctly were considered as having a good understanding of the structure of the design in question 9 as it is not possible to talk about using techniques without referring to what elements they have been applied to.

2.2 Analysis of the constructs of the question

In the tutorial, 6 possible techniques to create the illusion of movement were identified in slide 39 and 40 illustrated in slides 40, 41 and 42. They were overlapping, repetition of figures, fuzzy outlines, anticipated movement, multiple images and optical movement.

In question 9 illustrated above, five techniques were used to achieve the design principle illusion of motion, i.e. repetition and overlapping of the square shapes, very fuzzy outlines and blurred images

Addendum 7 (cont)

and optical movement achieved by the strong diagonal lines crossing the format from top left to the middle, to achieve the illusion of movement.

3. Question 12

“Discuss how the elements of “texture” and “proportion” bring interest to this design”

**3.1 The criterion**

Question 12 required students to identify the design elements proportion and texture. Participants had to identify the relevant slide on the tutorial and understand that the small human figure is compared to the gigantic sunflower, is unrealistic.

The researcher looked for elements in the responses referring to the relevant explanatory text on the tutorial. Slides 33 and 34 explain the difference between tactile texture and visual texture. “*We experience texture when we touch objects and feel their roughness, smoothness or patterns - called “Tactile Texture ... Visual Texture is created by varying the pattern of light and dark areas on an object ...”*”. Proportion is described on slide 22 in the following way: “*Proportion refers to relative size, size measured against other elements or against some mental norm or standard.*”

3.2 Analysis of the constructs of the question

The image in question 12 was taken from the tutorial; slide 22, which explains the design principle of scale and proportion. Proportion is explained on slide 22 as a synonym for the term “scale”. The slide

Addendum 7 (cont)

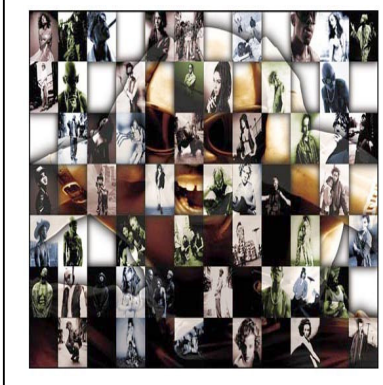
also explains that one can only talk about proportion if one compares two different sizes with each other. On the same slide the exact same image illustrating proportion than the one used in question 12, with an explanation of how proportion works on the image: *“(b) The unrealistic proportions of the small human figure against the huge sunflower, shows how relative the concept of size is”* (slide 22). Analysing the image further, it seems that, because of the large scale of the sunflower compared to the small size of the human figure, the texture on the pollen and petals appears very tactile causing the sunflower to become the “mountain” the human climbs, which is one way of seeing the interest caused by texture and scale.

Addendum 8 The test – questions regarding visual analysis

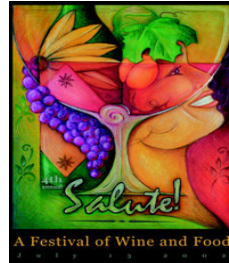
Questions 5

Identify all the design principles achieved in each of the designs below. Explain which design elements have been used to achieve this and how it was achieved.

5.1



5.2



5.3



Addendum 9 The test – analysis of the designs in questions pertaining to visual analysis

Question 5. 1

Analysis of the constructs in the design

The design principles achieved in this design, were numerous. First, illusion of motion was achieved through the use of diagonal lines and the circular direction at which the small figures in the rectangles are placed around the big moving figure in the centre, causing the viewer's eye to move around the format. Second, unity with variation is achieved by repeating the shape, size and tonal value of the rectangles. Subtle variety is achieved by contrasting the dominating unity of the geometric rectangles with organic human figures. The shaded lines delineating the rectangles as well as the figures, creating depth and visual texture, further achieve unity. Variety is further achieved by contrasting the small figures in the rectangles with the large figure in the centre. Emphasis is created through confronting the viewer with the large figure in the centre, with the open mouth as focal point. Illusion of space is achieved through the visual texture created by varying the pattern of light and dark areas on the format. Areas of light and dark give the impression of depth to the rectangles and large figure in the centre. The transparency of the large figure in turn contributes to texture, illusion of depth and space. The principle of asymmetrical balance was achieved by the large top part in the light tonal value of above the horizontal axis balancing the smaller dark part at the bottom of the horizontal axis, using the technique of equal distribution of visual weight with dissimilar objects.

The minimum constructs a participant had to refer to in the response, were:

Design principles: scale and proportion, unity, emphasis,

Design elements: line; shape; tonal value; size and texture

Techniques: illusion of motion, diagonal lines, circular direction, contrast, variety, transparency, and repetition.

Question 5.2

Analysis of the constructs in the design

The design chosen for question 5.2 is a 2-D graphic design of an advertisement on a poster. It was chosen to balance the level of difficulty that was considerably higher in question 5.1 and 5.3, because the researcher considered the design principles and design elements easier to read than in the other two questions. Images are much more recognisable and less cluttered on the format than in the design below.

Addendum 9 (cont)

Design principles achieved in this design, were numerous. First, unity with variation was achieved by repeating circular shapes of the grapes, bananas, and bowl and second, the curved feminine lines of stem of bowl, woman's neck, flowers. Contrasting big shapes, e.g. the bowl and the woman's face with the small shapes of the grapes, flowers, bananas, achieved the principle of scale and proportion. Emphasis was achieved by the multi-layering of the red area in the wine glass and fruit over the

woman's face, which is in turn pulled down by the red area at the right towards the bottom part of the design where the viewer's eye rests on the text. Emphasis is strengthened by the contrast between black band at the bottom and curved line of grapes leading the eye to bottom part of the format. Illusion of space is created by the transparency of glass bowl contributes to illusion of depth and space as well as by the dark tone in the background that creates depth. At the same time contrasting sizes of the small grapes against the large wine glass and face, achieves the principle of scale and proportion. Asymmetrical balance is created by the equal distribution of visual weight of dissimilar objects on both sides vertical axis. This can be seen in the small dark grapes on left equal in visual weight than light large face on right.

The minimum constructs a participant had to refer to in the response, were:

Design principles: emphasis, unity with variation; scale and proportion, balance, illusion of space,

Design elements: size, shape, line, tonal value, colour, texture

Techniques applied: contrast, repetition, transparency, layering

Question 5.3*Analysis of the constructs of the question*

Unity with variation was achieved by applying the technique of sameness, i.e. repeating shapes that look as if they belong together, e.g. the curved lines of handle, spout and decoration of kettle. It was further created by repetition of the circular shapes of the lid, and the spout. Asymmetrical balance was achieved by the equal visual weight of the dissimilar long solid spout on the left of the vertical axis and the short sharp curved open shape of the handle on the left of the vertical axis. Tactile texture is created by the thick application of the blue and yellow enamel on the red background of the teapot. Emphasis is on the small light handle of the geometric lid, contrasted by the large size of the curved handle as well as by the dark background in the picture.

The minimum constructs a participant had to refer to in the response, were:

Design principles: illusion of motion; unity with variation; emphasis; balance; scale and proportion

Design elements: line; shape; tonal value; size and texture

Techniques: contrast, transparency

Addendum 10 The test – scoring criterion for questions regarding visual analysis

Level of knowledge, understanding and skill	Explanation	Scoring
Identify minimum design principles only	Indicate very poor retention, but no understanding and analytical skill	- 40%
Identify some design principles and elements only	Indicate poor retention and understanding and no analytical skill	40 – 50%
Identify minimum design principles and design elements only	Indicate average retention but limited understanding	50 – 69%
Identify minimum design principles and design elements and explain techniques used to achieve the visual effect	Indicate above average retention, understanding and skill	70 – 79%
Identify more than the required minimum design principles and elements and explain interaction between constructs in operation well	Indicate good retention and good understanding of constructs and analytical skills	80% +

Addendum 11 The test – questions regarding drawings

Question 1

Illustrate the design principle of “unity” achieved by shape and pattern.

Question 2

Illustrate the design principle of “asymmetrical balance” achieved by size and tonal value”.

Question 3

Illustrate the design principle of “visual texture” achieved by line, tonal value and shape.

Addendum 12 The test - rating system for questions regarding drawings

Scale: Poor = 0 – 3, Average = 4 – 6, Good = 7 – 10

Participant	Constructs				Average for learning after some time
	Principles	Elements	Techniques	Visual interest	
Participant 9	5	4	3	3	4
Participant 14	5	5	5	3	4
Participant 21	7	5	5	3	5

Addendum 13 The project – scoring system for cognitive indicators

Construct	Coding	Cognitive indicator
Design principles	Unity, balance, scale, proportion, emphasis, rhythm, illusion of space.	Clarity of realisation of design principles.
Design elements	Line, shape, size, texture, illusion of movement, colour, tonal value.	Number of and interesting way in which design elements used.
Design techniques	Repetition, addition, omission, distortion, enlargement, diminution.	Visual interest created through variety and creativity of techniques used.

Weight

Very poor (0 – 29%)

Poor (30% - 49%)

Average (50% - 64%)

Good (65% - 75%)

Very good (76% - 100%)

Addendum 14 The examination – scoring system for cognitive indicators

Construct	Coding	Cognitive indicator
Design principles	Asymmetrical balance, unity in lamp shade and its stand	Clarity of realisation of design principles.
Design elements	Line, visual texture,	Number of and interesting way in which design elements used.
Design techniques	Contrast	Variety and creativity of techniques used to create visual interest.
Idea	Create soft, intimate light	Clarity of idea.

Weight

Very poor (0 – 29%)

Poor (30% - 49%)

Average (50% - 64%)

Good (65% - 75%)

Very good (76% - 100%)

Addendum 15 Adequacies for electronic learning support material according to Hannafin and Peck (1988)

Adequacy	Description
<p>Instructional adequacy: Refers to the extent to which the intervention provides the necessary supports and features to accomplish the objectives at hand</p>	<ul style="list-style-type: none"> • Goals and objectives clear • Navigational and instructional directions • Learner control • Relate to prior knowledge • Questions asked frequently • Give “help” • No vague and ambiguous • Important terms, concepts and information amplified effectively • Emphasis distributed • Opportunities for interaction • Personalized instruction
<p>Programming adequacy Refers to the degree to which the intervention is executed</p>	<ul style="list-style-type: none"> • Program free of conceptual and programming loops • Disk management requirements minimal • Intervention runs efficiently • Information displayed accurately • Components logically and systematically located
<p>Curriculum adequacy Refers to the degree to which the intervention procedures, activities and formats are consistent with accepted standards</p>	<ul style="list-style-type: none"> • Content relevant and consistent • Approach consistent • Learning support material consistent • Procedures consistent with expectations • Complete in time • Information relevant
<p>Cosmetic adequacy Refers to the visual appeal the intervention has for the learner</p>	<ul style="list-style-type: none"> • Screen space used effectively • Protocol consistent and effective • Information presented free of crowding and cramming • Appropriate organisation of information • Presentation short