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# Aim of the Study

...how to use infographics as a learning tool was discussed in order to equip students with visual literacy skills.

## What is & Why Infographics?

### Mother Nature's Pop Science Guide to

## Birds PART 2

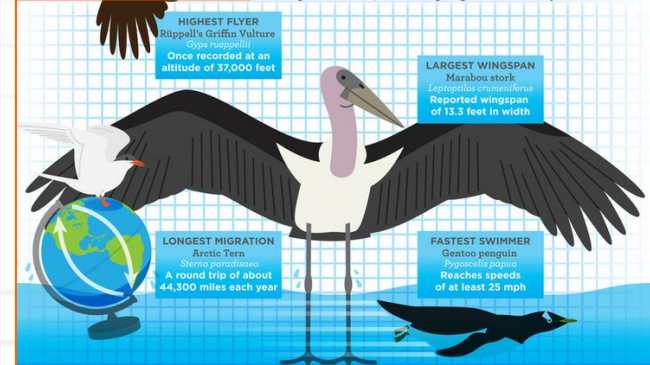
#### BIRD BEAKS

The bills of birds have evolved to let them collect, peck at or scoop up different types of foods ranging from algae and insects to grains and fruits to fish and small animals.



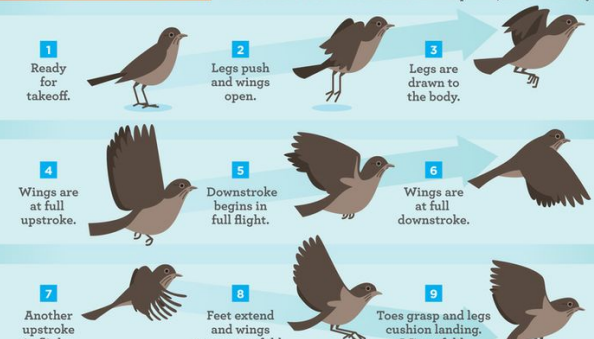
#### BIRD EXTREMES

With more than 10,000 known species, birds have evolved into all shapes and sizes, while adapting to life on every continent.



#### HOW BIRDS FLY

With the exception of ratites (ostriches and emus), penguins, and a number of diverse endemic island species, all birds can fly.



...the visual display of any data or information aiming to present the information in a **quick** and **clear** way.

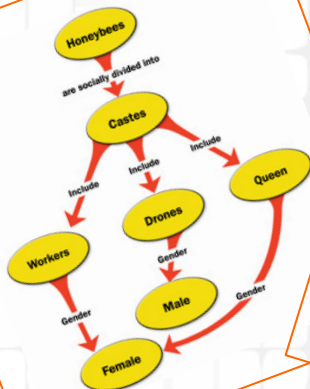




# Infographic is...

... visualization of data or ideas that tries to convey **complex information** to an audience in a manner that can be **quickly consumed** and **easily understood**[5].

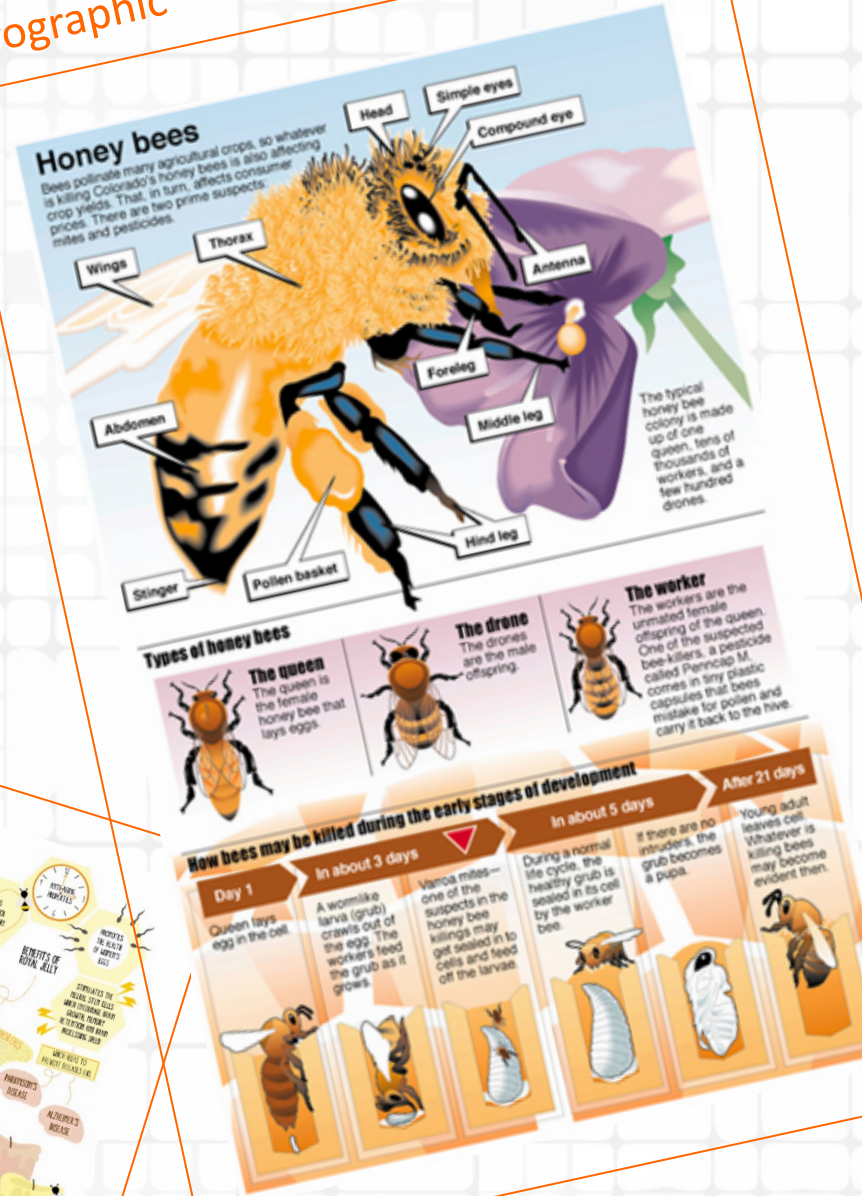
concept map



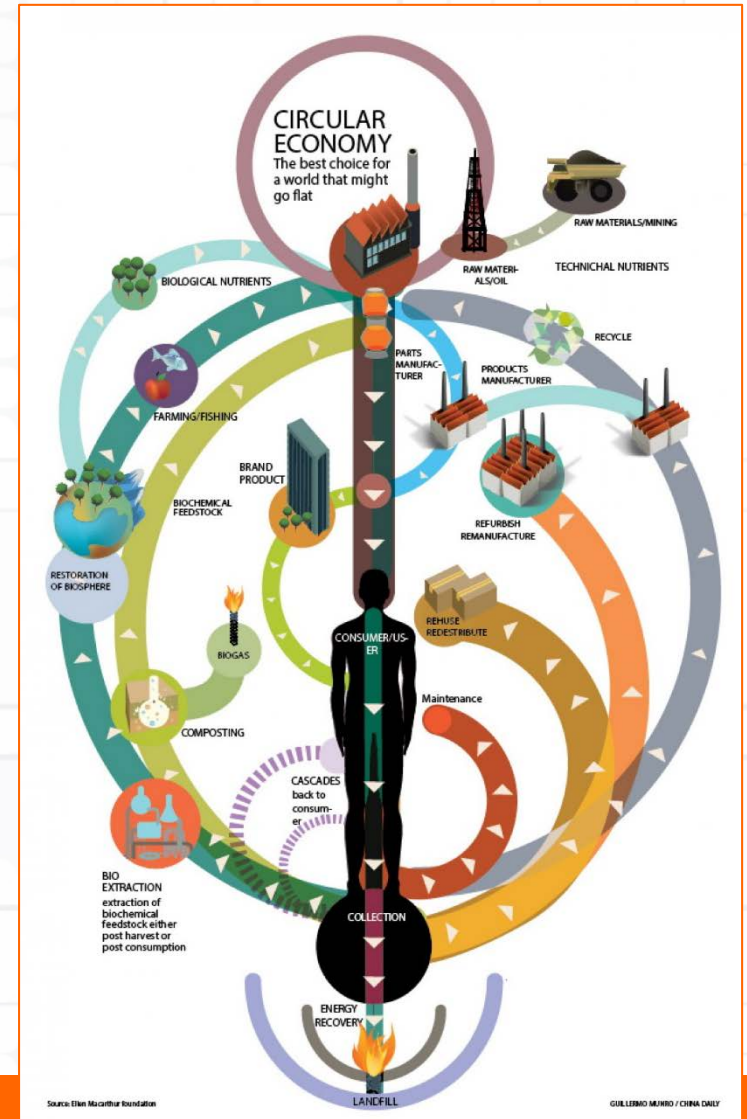
mind map



infographic



...which may be **complicated** due to displaying the visual analysis of the global economy or be as **simple** as a traffic sign, are currently used for **information** and **communication** purposes [7].



# Visual literacy is...

... defined as 'A group of acquired competencies for **interpreting** and **composing** visible messages' [2].





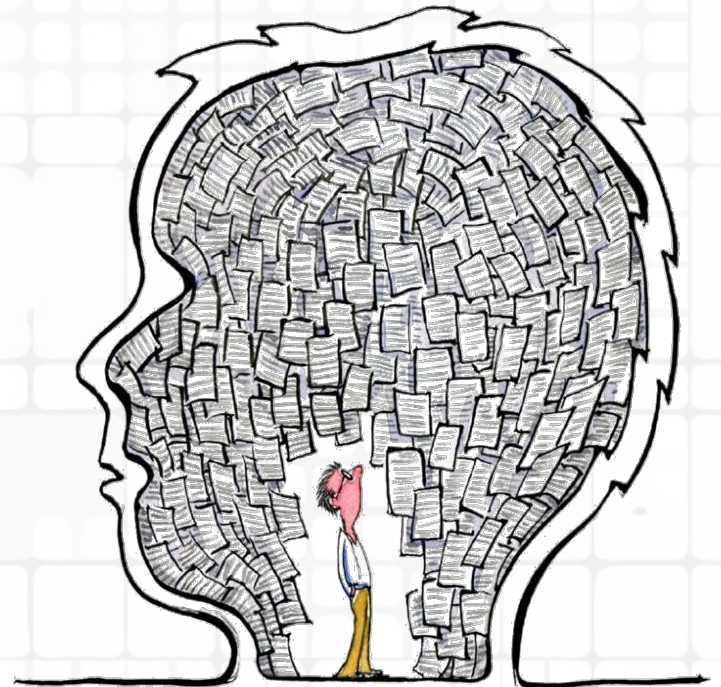
# A visually literate person

*is able to:*

discriminate, and make sense of visible objects as part of a visual acuity,

**create** static and dynamic visible objects effectively in a defined space,

**comprehend** and appreciate the visual testaments of others, and conjure objects in the mind's eye [2].



# Importance of the study...

The **increase of visual messages** surrounding individuals bring about visual information processing needs and cause the movement for **developing visual literacy** and spatial skills [1].





# Visual literacy...

...allows a deeper interaction with messages of all kinds and introduces the process of analytical thinking about representation and meaning.

Educators realized this idea that **visual age requires visual literacy skills** as well as verbal skills that both of them must be developed [3].



# Importance of the study...

In order to use especially visually intensive information and communication technology applications effectively, teachers and students should be able to **communicate visually** [4].

To prepare students to be successful learners, confident and creative individuals, active and informed citizens, they must be able to **comprehend**, **interpret** and **extrapolate** from information presented in a wide variety of formats.



## *...to improve image literacy skills*

As technology advances, teachers and teacher candidates should gain in teaching visual literacy skills. Two ways to improve image literacy skills are recommended:

- 1) to help learners **read or decode visuals** through practicing analysis techniques
- 2) to help learners **write or encode visuals** as a tool for communication [6].

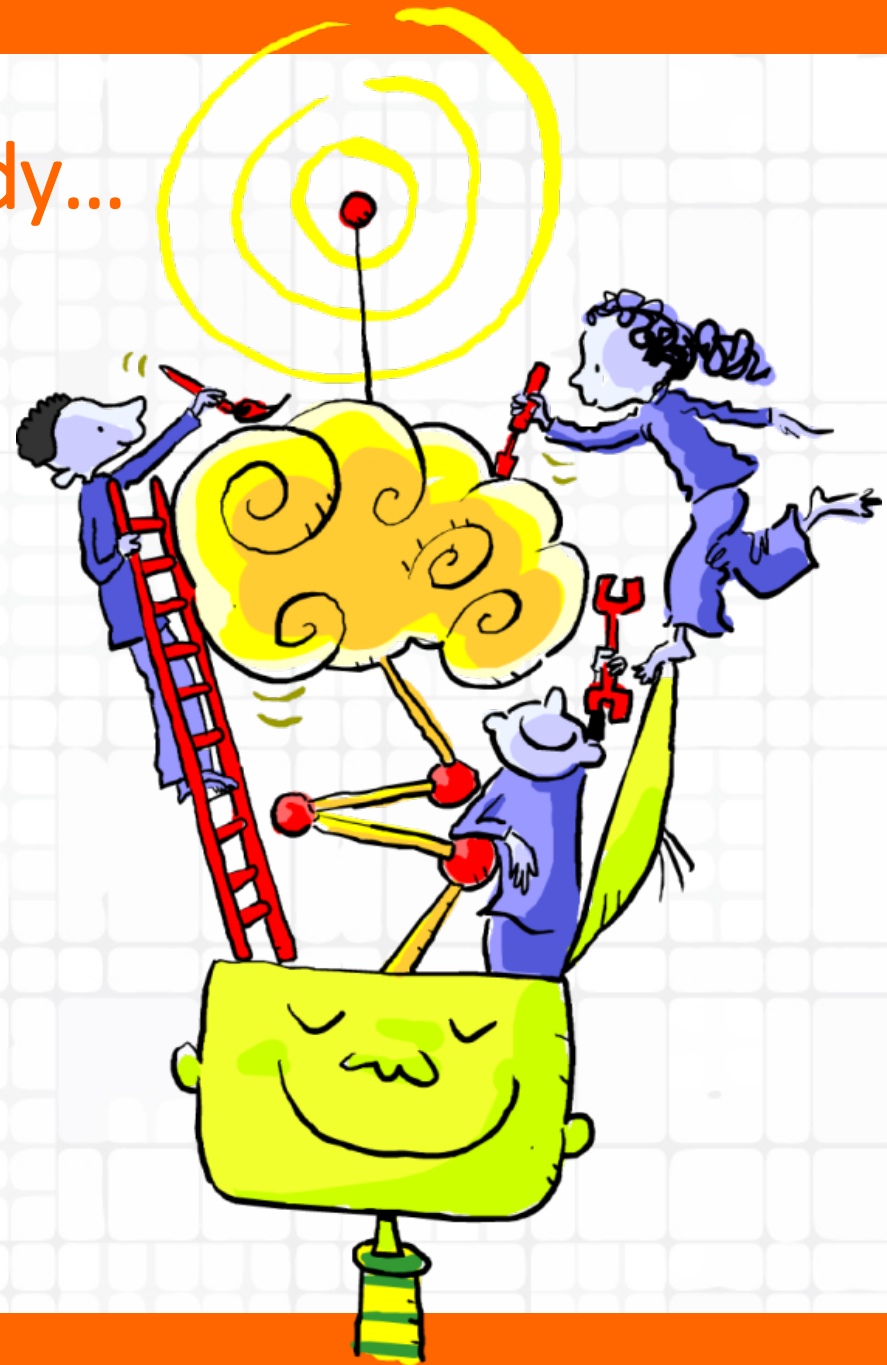




# Importance of the study...

Therefore teaching **visual literacy helps students interpret visual media** and becoming a much broader and extensive body of learning and comprehension in education.

Visual presentations became more complicated with the utilization of technology and it is important to discuss **how to interpret and design infographics in relation with visual literacy in education** [8].



# Instructional Technology &...

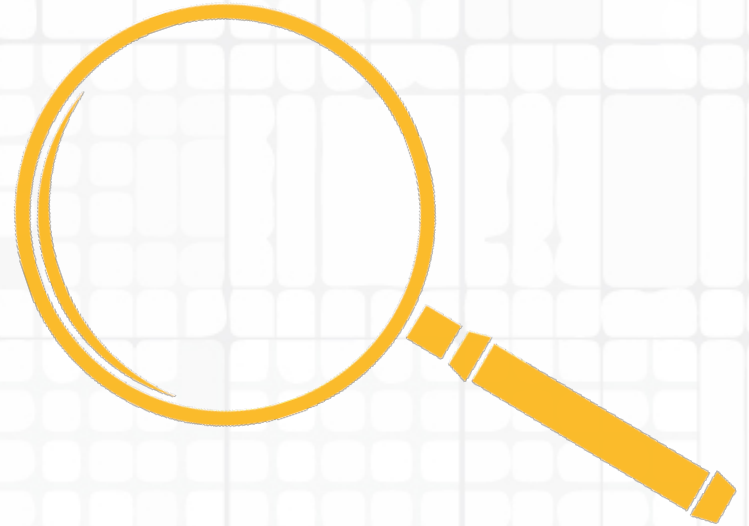
One of the most important issues of the information age that should be subjected by instructional technology is “structuring high-quality knowledge, producing and designing information”.



Could infographics be used in the learning process for learners to construct and design information as well as structuring knowledge?

Could infographics be a way of ensuring qualified information when they are used in learning environments?

# Method

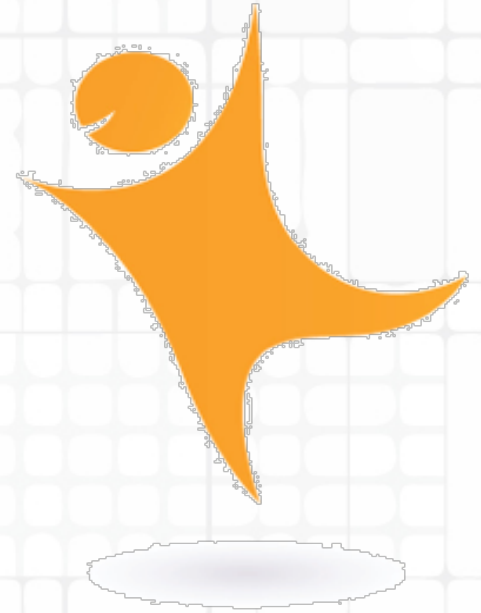


This study is a **case study**  
& aims to **analyze utilization of infographics**  
**within the learning process** as research and  
learning tools with a focus on their usage in structuring  
knowledge, designing and constructing information through the  
**instructional design example.**



# Study Group

The research was conducted with **64** (32 female and 32 male) **2<sup>nd</sup> grade** students, enrolled in **Computer Education and Instructional Technology Department** during the spring semester of 2012 – 2013 academic year.



In the previous semesters, students had attended the “**Material Design and Utilization in Education**” and “**Principles and Methods of Teaching**” courses, which are relevant to the instructional design course content.

# Implementation Process of the Study

## *Instructional Design Course Description*

- Identifying problems through analyzing the existing education and teaching environment with respect to the instructional design principles
- Finding solutions to the identified problems
- Designing new models using the instructional design theories
- Designing instructional materials for online learning environments

### ***The theoretical part***

The basics and history of instructional design and technology identification and analysis of the needs, characteristics of learners in learning environments, teaching strategies and conceptual teaching, concept maps, worksheets, **instructional design models & infographics as learning tools.**

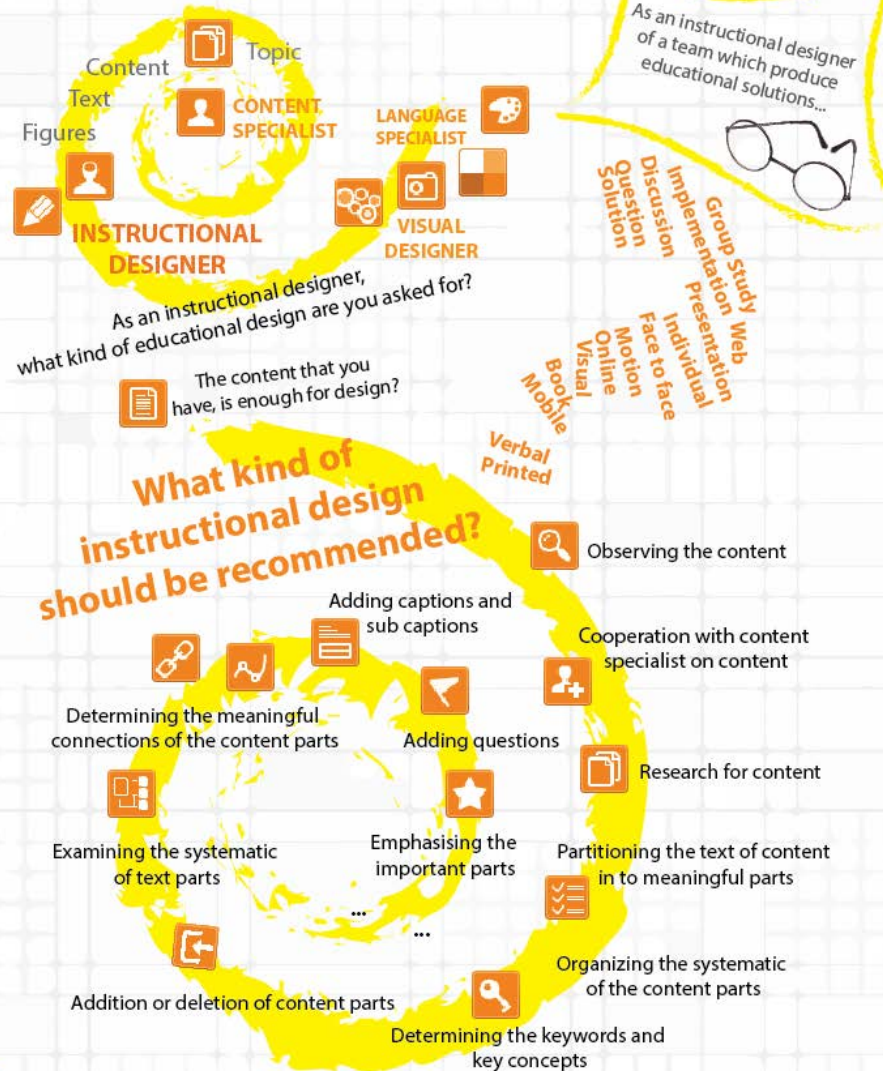
### ***The practice part***

Learners attained practical skills about instructional design.

**Final  
Goal**

Students were expected to select one of the **instructional design models** and **design an infographic to be used as an instructional design tool** as term project.

# How to Design Instructional Design Process





# How to Design Instructional Design Process



As an instructional designer  
of a team which produce  
educational solutions...



Group Study  
Web  
Presentation  
Individual  
Face to face  
Motion  
Online  
Visual  
Book  
Mobile

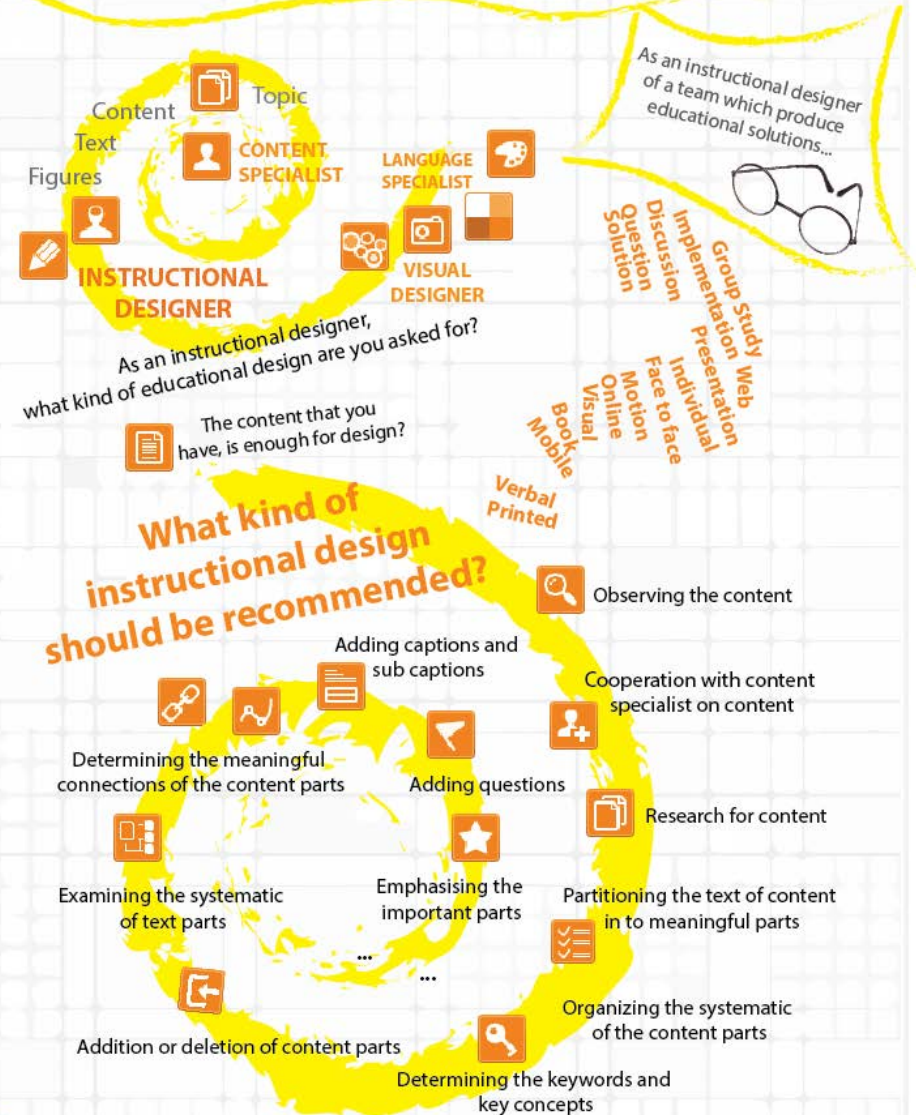
Verbal  
Printed

## Two cycles...

...aimed to acknowledge students about **the position of the instructional designer in the team.**

...indicated the **purpose of their positions as instructional designers** and provided the framework of their responsibilities.

## How to Design Instructional Design Process





The cyclical display centering the field expert or the resource continued within an external and internal intercyclical pattern with the inclusion of the instructional designer, visual designer and the linguist respectively.



# Implementation on Infographic



The first cycle ends with questions which remained within the field expertise of the instructional designer, started with the questions..

In answering the question on the type of the instructional design, students were provided with the keywords symbolized with question marks.

## What kind of instructional design should be recommended?



Cycle started with the reading and analysis of the content provided by the field expert.

## What kind of instructional design should be recommended?



After the content is created, it was suggested to divide the script into meaningful sections and determine the key words or key concepts in the script.

## What kind of instructional design should be recommended?



Questioning the systematics of the script and organizing the systematics between the meaningful sections, determining the relationships, completing the missing points in the content as determined in the research or removing the unnecessary sections indicated the progress in creating the script.

After the modifications in the meaning dimension such as finding a title or emphasizing the essential points in a script etc., the visual organizations came as the next phase.



# Implementation on Infographic

## Script and Wording

Students were expected to analyze the script in line with the given sample content and follow the steps explained above using the given figure.

## Scripts into Meaningful Sections & Figures

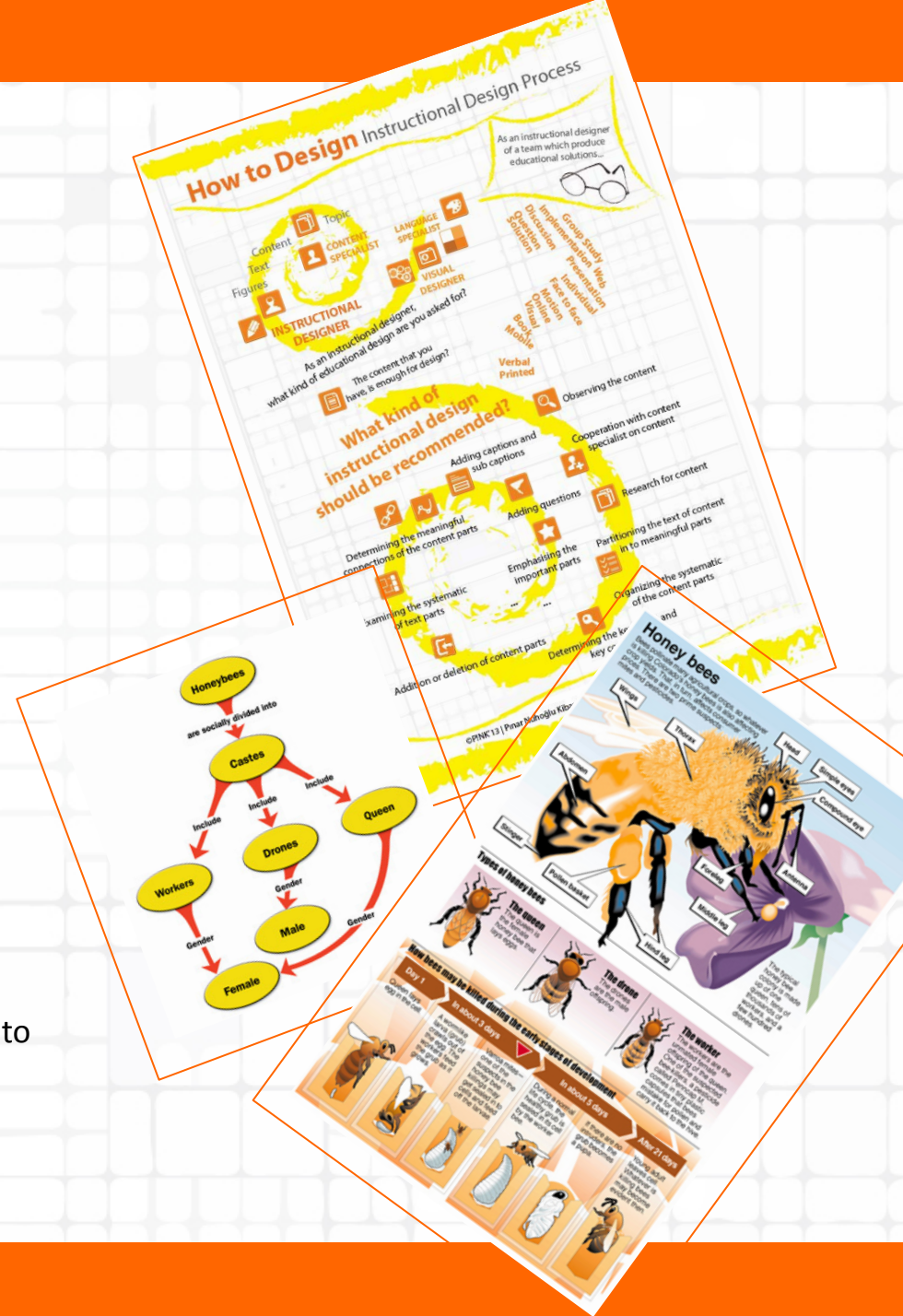
Students were expected to divide the scripts into meaningful sections and place them on a blank screen with a white background using the intended software (PowerPoint, Flash etc.). while supporting with the visuals.

## Creating Concept Maps

With the aim of assisting students in their infographic design and script analysis, conceptual teaching and concept maps were emphasized and students were expected to create concept maps using the given script.

## Searching for Infographics

During this week, when the figure and script exercise was performed, students were requested to search “education” on Pinterest and evaluate the infographics they found so that they could see as many examples as possible.



# Data Collection Tool

The rubric that was developed by the researchers was used in the study and the infographics designed by the students were evaluated through this rubric.

The rubric was composed of the **title, elements, visualization, font, colors, page format** and **organization of information** dimensions.

According to the measures, the infographics were scored for each dimension as **0, 1, 2** and **3**.



## Title

The title is in line with the content and informative.

## Elements

Elements include repetitions for the transfer of the content and for the learner to understand easier.

## Visualization

Visualization pattern reflects the content and ensures that the content is comprehended easily and rapidly.

## Font

The font completes the content and readable.

## Colors

Selection of colors increased visibility; different tones of the same color have been used wisely.

## Page Layout

The page layout involves the components that reflect the content and it is organized from the general to the specific or from the specific to the general.

## Organization of Information

One of the methods for organization of information is used in such a way to reflect the content.

# Envisioning the future of education technology



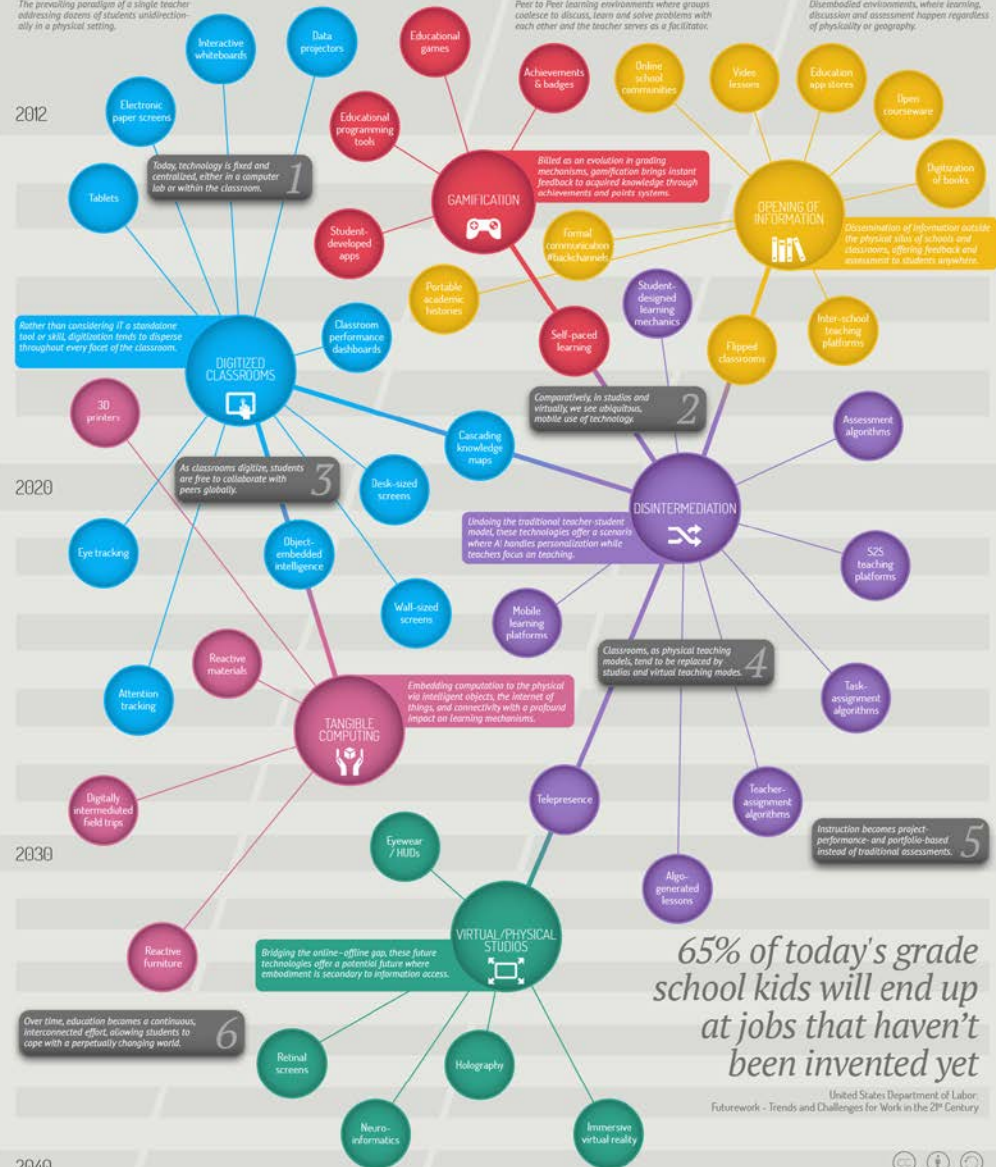
Education lies at a peculiar crossroad in society. On one hand it has the responsibility of anticipating real-life skills by preparing us for an increasingly complex world – but education methodologies can only be formalized after practices have been defined. This dichotomy is particularly aggravated when it comes to technology, where fast-paced innovation and perpetual change is the only constant.

This visualization attempts to organize a series of emerging technologies that are likely to influence education in the upcoming decades. Despite its inherently speculative nature, the driving trends behind the technologies can already be observed, meaning it's a matter of time before these scenarios start panning out in learning environments around the world.

## Classroom

The prevailing paradigm of a single teacher addressing dozens of students undirectionally in a physical setting.

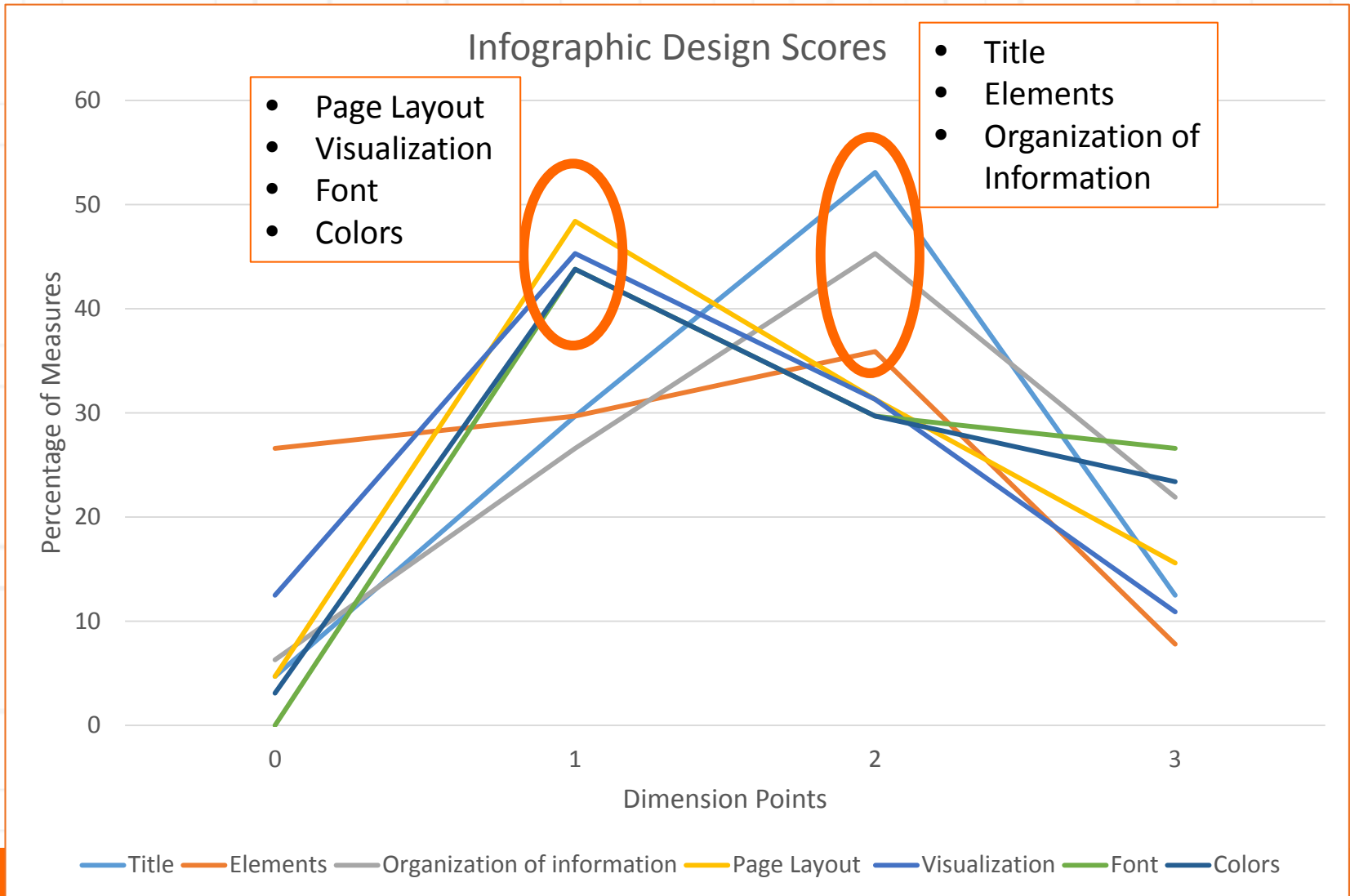
2012



2040

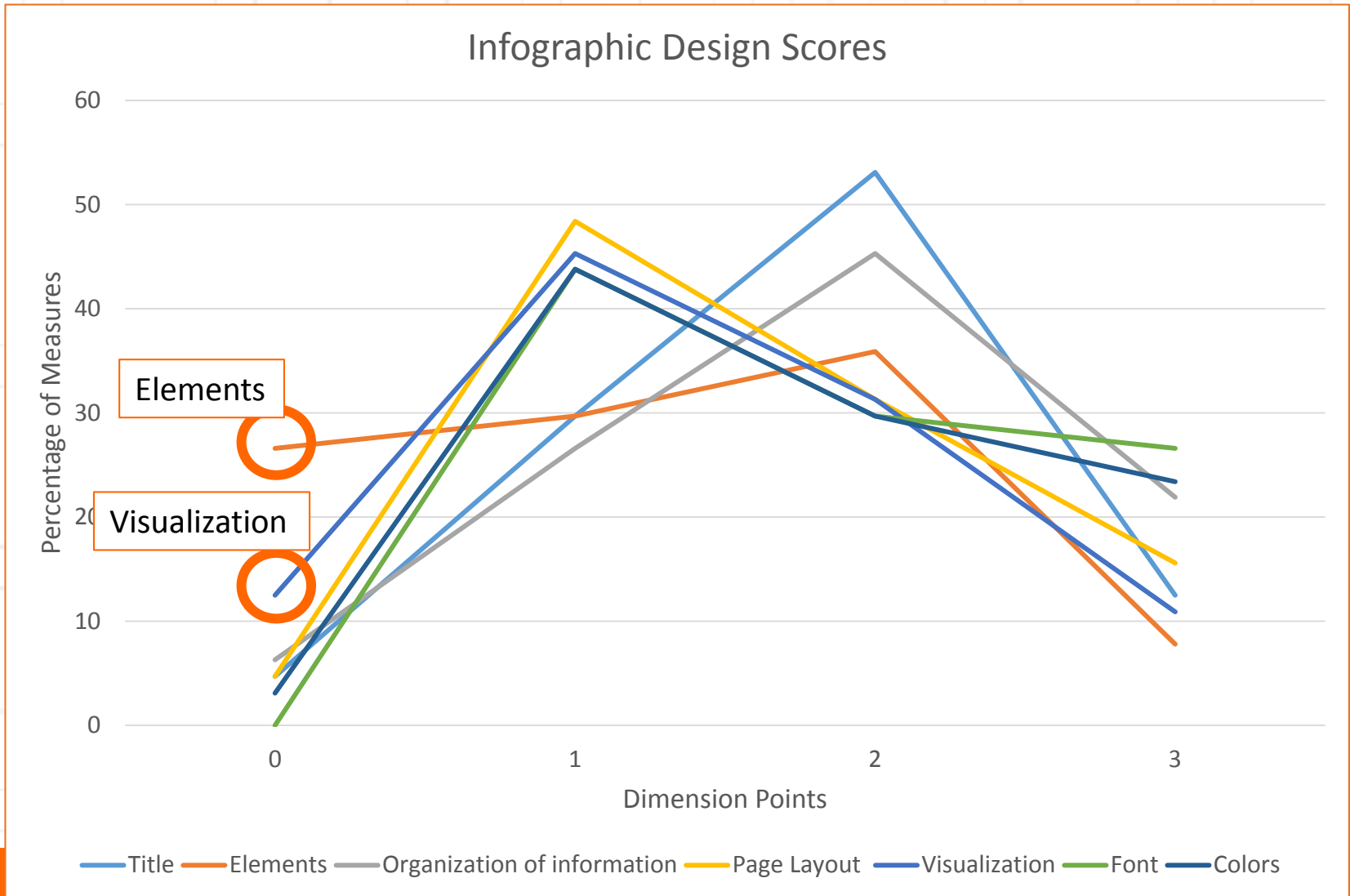


# Findings





# Findings



# Findings

In terms of dimensions and measures, the scores indicated that the highest percentages belonged to:

## Page layout

**(1)** The page layout is not organized in such a way to address the content-related components.

## Visualization

**(1)** More varied visualization patterns should be used for the visualization of the content.

## Fonts

**(1)** The font complicates the reading of the script.

## Colors

**(1)** Selection of colors is not visually satisfying and it decreased the level of visibility.

## Title

**(2)** The title could be more comprehensive in order to present the essential points in the content.

## Elements

**(2)** Elements are used in varied patterns reflecting the content.

## Organization of information

**(3)** One of the methods for organization of information is used.

# DICK & CAREY

## ÖĞRETİM TASARIM MODELİ

**ÖĞRETİMSSEL STRATEJİ**

**Dick ve Carey'nin (1990) aşama aşama tasarım modeli;**  
Öğretmen bütünüyle iletişimin başlatıcısı ve moderatörü konumundadır. Tasarımcının öğrenme hedeflerini ve bu hedeflere ulaşılmasını sağlayacak öğretim stratejilerini belirlediği bir dizi olay ve olgular vardır.

**SİSTEMİN YAKLAŞIMI**

- Birbiriyle ilgili olan ve birlikte çalışan parçalar, hedefi gerçekleştirmek amaçlı çalışır.
- Sistem hedefe ulaşmışsa değerlendirme yapılır, ulaşmamışsa modife edilir.
- Öğretimsel hedefler üzerine dikkat toplanır.
- Her bir adım birbiriyle bağlantılıdır.
- Farklı seviye ve statüdeki öğrencilere uygulanabilir.

**MODELİN AŞAMALARI**

1. Aşama: Öğretimsel Analiz, Davranışların Yazılması, Giriş Davranışlarının Belirlenmesi, Kriter Referans Testinin Geliştirilmesi, Öğretim Stratejilerinin Belirlenmesi, Materyal Seçimi, Biçimlendirici Değerlendirme

2. Aşama: Öğretimsel Analiz, Davranışların Yazılması, Giriş Davranışlarının Belirlenmesi, Kriter Referans Testinin Geliştirilmesi, Öğretim Stratejilerinin Belirlenmesi, Materyal Seçimi, Biçimlendirici Değerlendirme

**MODELİN AŞAMALARI**

1. Öğretim Hedeflerinin Belirlenmesi

2. Öğretimsel Analiz

3. Giriş Davranışlarının Değerlendirilmesi

4. Performans Hedefleri

5. Kriter Referans Testlerinin Geliştirilmesi

6. Öğretim Stratejilerinin Geliştirilmesi

7. Öğretim Materyallerinin Seçimi Ve Geliştirilmesi

8. Biçimlendirici Değerlendirmenin Geliştirilmesi

9. Öğretimi Düzenlemek

10. Toplam Değerlendirmenin Yürütülmesi ve Geliştirilmesi

# AYRINTILAMA KURAMI

Ayrıntılama kuramı, sunulmak istenilen bir içeriğin nasıl sıralanması ve organize edilmesi gerektiğini gösteren bir modeldir.

Reigeluth kuramını, kavramsal, işlemel, kuramsal tasarım ve planlama için ayrıntılı süreçler ortaya koyarak ifade etmiştir.

Ayrıntılama kuramı özellikle bilişsel alana yönelik hedeflerin tasarımında kullanılmaktadır.

## Ayrıntılama kuramının ilkeleri nelerdir?

**1. Düzenlenmiş ders yapısı**

Dersin odağını yansıtacak organizasyon yapısının belirlenmesidir. Üzerinde durulmak istenen bilgi grubu ile ilgili düzenleme biçimi seçilmelidir.

**2. Basitten karmaşığa doğru sıralama**

Basitten:  $2 + 2 = 4$  (Basitten)

Karmaşığa:  $1 + 9 - 5 - (-3 + 5) - (-5) = 5$  (Karmaşığa)

Düzenlenmiş yapıya göre hazırlanmış ders basitten karmaşığa doğru bir sıralama içermelidir.

**3. Ders içindeki sıralamalar**

Bilgi bileşenleri tabana alınarak ders için bütün içeriklerin sıralaması tasarlanmalıdır.

**4. Özetleyiciler**

Ders ve ünite bazında içerik gözden geçirilmelidir.

**5. Sentezciler**

Öğrencilerin yeni öğrendikleri bilgiler ile önceki bilgilerini kaynaştırarak çözümlemeleri sağlanmalıdır.

**6. Analogiler**

Kuş kanadı ile uçak kanadı arasındaki benzerlik

İçerik ile öğrenenlerin önceki bilgileri arasında ilişki sağlanmalıdır.

**7. Etkinleştiriciler**

Öğrenenlerin öğrenme sürecinde kullandıkları stratejileri tetikleyen resim, diyagram, hatırlatma ipuçlarıdır. Etkinleştiriciler ile hangi stratejinin öğrenme için uygun olabileceği mesajı verilebilir.

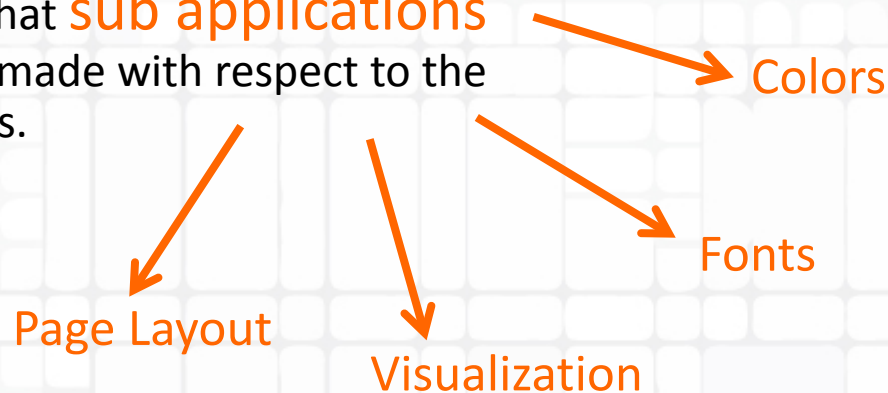
**8. Öğrenen kontrolü**

Öğrenciler, hem içerik hem de öğretimsel stratejileri kullanmak konusunda yüreklendirilmelidir.

# Conclusion, Discussion and Recommendations

## 1. More exercises on visual design...

According to students' design scores, the accumulation is observed to have occurred in the low degrees and this indicates that **sub applications** should be made with respect to the dimensions.



Visual Design !



## 2. Analyzing more infographic examples by using rubric...

# Conclusion, Discussion and Recommendations

## 2. Working with small groups & getting peer feedback....

“  
*In order to assess the quality of an infographic, which is in the form of a summary, it is important to determine how much it acknowledges, impresses and attracts the attention of the reader [9].*”

In order students to produce better design solutions, they could be recommended to **work periodically on their drafts** in small groups starting from the moment they work individually on their themes.

In this respect, the **feedback that peers of the students may provide** about their design solutions could assist them in producing better solutions.

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# A New Approach to Equip Students with Visual Literacy Skills: *Use of Infographics in Education*



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*THANKS...*

