

Finding, Analysing, Dissecting and Summarising a Research Paper

Dr. Thomas Hailey

Introduction

- ▶ To start off!
- ▶ Finding your research papers
- ▶ The hierarchy of research papers
- ▶ Deciding very quickly whether they are relevant in terms of:
 - Qualitative/Quantitative
 - Is it primary or secondary?
 - What methodology is utilised?
 - What is the research design?
 - Is the paper empirical or discussional?
 - Are there participants?
 - What are the research questions?
 - What are the results?
 - What are the limitations?
 - What analysis techniques are used?

To start off

- ▶ You can find yourself lost in a sea of information and it is overwhelming
 - Academics forget what it is like to be so bombarded and confused
 - You can't read and process everything
- ▶ Just because something has been accepted as an academic article does not mean by any stretch of the imagination that it is perfect
 - I can personally attest to this
- ▶ You are allowed to be critical
 - In fact it is expected at honours level, masters level and PhD level
- ▶ Your opinion actually does matter
 - Has all the more power if it is objective, educated and delivered free of emotional disruption

Finding your research papers

- ▶ Firstly you have to be aware that you have access to all of the electronic journals that UWS has the access to
 - This is done through the library website
 - It is the first hit when you Google the following: “UWS library electronic resources”

Finding your research papers

Module: 1819_Serious Games X uws library electronic resources X University of the West of Scotland X +

https://www.google.com/search?q=uws+library+electronic+resources&ie=utf-8

Google uws library electronic resources

All Shopping Maps News Images More Settings Tools

About 75,800 results (0.56 seconds)

Library | UWS | University of the West of Scotland
<https://www.uws.ac.uk/library/> ▼
Explore UWS Library. UWS Library has an extensive collection of relevant hard-copy and online study resources that support learning, teaching and research.

Books, Articles & More
Finding Books, Articles & More.
Home · Library; Books, Articles ...

Databases AZ
A-Z list of UWS Library's subscription databases and a ...

Journals & e-Journals
Search for journals and e-journals held by UWS Library.
[More results from uws.ac.uk »](#)

Using the Library
Use One Search to find, read and borrow resources in the UWS ...

Books & e-books
Search for print and electronic books (e-books) in the UWS ...

Nursing & Midwifery
CINAHL: access to over 3000 health, nursing & midwifery ...

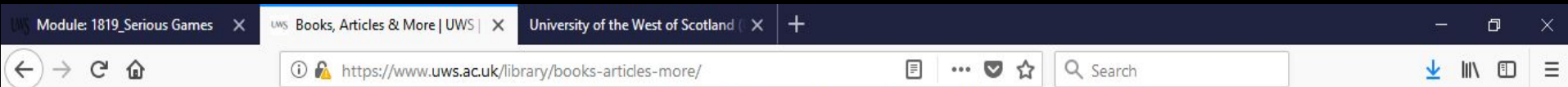
Accessing online resources - Moodle - UWS
moodlearchive2017.uws.ac.uk/pluginfile.php/477193/mod_resource/.../page_44.htm ▼
Accessing online resources. Access UWS Library's electronic databases, eJournals and eBooks at the e-Resources and Athens page of the University Library ...

Developing Your Study Skills | University of the West of Scotland - UWS
<https://www.uws.ac.uk/library/books-articles-more/databases-a-z/-life/student-support/-/supporting-your-studies/> ▼

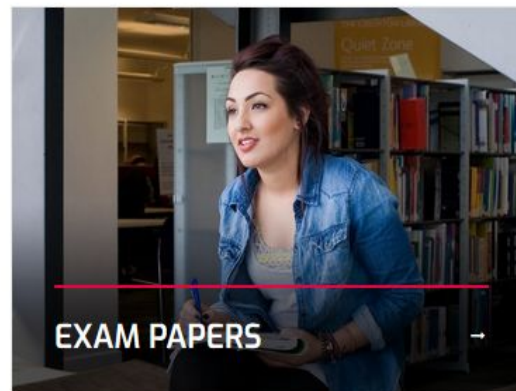
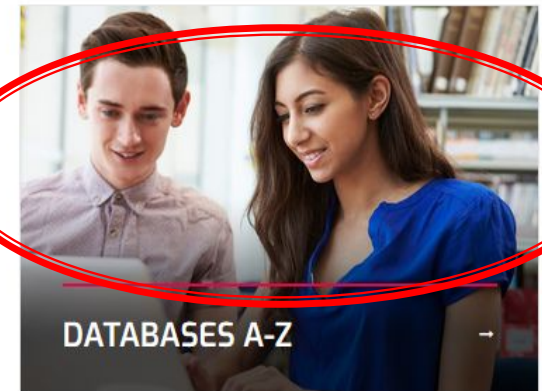
Type here to search

3:01 PM 8/26/2018

Finding your research papers



resources in a range of formats. Select a format for guidance on locating the resources you need.



Finding your research papers

The screenshot shows a web browser with multiple tabs. The active tab is 'Databases A-Z | UWS | University of the West of Scotland'. The address bar shows the URL: <https://www.uws.ac.uk/library/books-articles-more/databases-a-z/>. The website header includes the UWS logo and navigation links: STUDY, INTERNATIONAL, LIFE AT UWS, RESEARCH, BUSINESS, and a search icon. A left sidebar contains links to Standards, Special Collections, and Google Scholar. The main content area is titled 'A-Z' and features a section for 'A' with the following database descriptions:

- ACM Portal** - full text collection of all Association for Computing Machinery publications, including journals, conference proceedings and books
- ACS** - American Chemical Society full-text peer-reviewed journals
- American Doctoral Dissertations** - citations and some full text access to US dissertations from 1902-
- ArXiv** - full text database of physics, computing and maths articles
- ASME Digital Collection** - journal articles, conference proceedings and books provided by the American Society of Mechanical Engineers

On the right side of the page, there are vertical buttons for 'INSTAGRAM', 'FIND A COURSE', and a downward arrow. The Windows taskbar at the bottom shows the search bar and various application icons. The system clock in the bottom right corner displays '3:06 PM 8/26/2018'.

Finding your research papers

- ▶ You will get a huge alphabetised list of all of the electronic journals that UWS has access to
 - These are probably the ones that are most relevant
ACM Portal, BioMed Central, Cambridge Core, EBSCO, Edinburgh University Press, Emerald, Education Resource Information Centre (ERIC), EthOS, IEEE Xplore Digital Library, Ingenta Connect, Oxford University Press, PsycARTICLES, PsycBOOKS, Psychology and Behavioural Science Collection, SAGE Journals Online, ScienceDirect, SocINDEX, Springerlink, Wiley Online Library
- ▶ Probably most relevant for games but not an exhaustive list
 - E.g. ArXiv: full text database of physics, computing and maths articles – CGT
 - British Library Sounds – Music Technology

Finding your research papers

- ▶ Each journal has its own search facilities but sometimes you can put together some fairly complex searches:
 - (“computer games” OR “video games” OR “serious games” OR “simulation games” OR “games-based learning” OR “MMOG” OR “MMORPG” OR “MUD” OR “online games”) AND (“education” OR “learning”) AND “evaluation”

Finding your research papers

- ▶ So if you click on a particular link you will be asked to log in with your BannerID and Network password
- ▶ So we will select Science Direct as an example

Finding your research papers

Module: 1819_Serious Games | Databases A-Z | UWS | Universi | 2,707 Search Results - Keyword: | New Tab

computer game" "program

2,707 results

Refine by:

Years

- ☐ 2019 (1)
- ☐ 2018 (135)
- ☐ 2017 (172)

Show more

Article type

- ☐ Review articles (173)
- ☐ Research articles (1,735)
- ☐ Encyclopedia (28)
- ☐ Book chapters (423)

Show more

Publication title

- ☐ Computers & Education (127)
- ☐ Computers in Human Behavior (123)
- ☐ Procedia - Social and Behavioral Sciences (70)

Show more

Research article • Open access

Flow experience in computer game playing among Thai university students

Kasetsart Journal of Social Sciences, Volume 39, Issue 2, May–August 2018, Pages 175–182

Supat Sanjamsai, Darunee Phukao

Download PDF (740 KB)

Research article • Abstract only

Open source computer game application: An empirical analysis of qua

Entertainment Computing, Volume 21, June 2017, Pages 1–10

Faheem Ahmed, Muhammad Zia, Hasan Mahmood, Shayma Al Kobaisi

Get Access

Want a richer search experience?

Sign in for additional filter options, multiple article downloads, and more.

Sign in >

Research article • Open access

Computer Game as Learning and Teaching Tool for Object Oriented Programming in Higher Education Institution

Procedia - Social and Behavioral Sciences, Volume 123, 20 March 2014, Pages 215–224

Wong Yoke Seng, Maizatul Hayati Mohamad Yatim

Download PDF (2,620 KB)

All I've put here is
"computer game"
"programming"
You can use AND OR

You can refine your search
using the options here

Feedback

Finding your research papers

Module: 1819_Serious Games X Databases A-Z | UWS | Universi X 2,707 Search Results - Keyword X google scholar - Google Search X +

https://www.google.com/search?source=hp&ei=wsKCW5-iOs2zkwWHsbL4Dw8... Search

Google google scholar Sign in

All Books News Shopping Videos More Settings Tools

About 161,000,000 results (0.31 seconds)

Google Scholar
<https://scholar.google.co.uk/> ▼

The system can't perform the operation now. Try again later. Advanced search. Find articles. with all of the words. with the exact phrase. with at least one of the ...

[Google Scholar Citations](#) · [About Google Scholar](#) · [Google Scholar Button](#) · [Metrics](#)

People also search for X

scopus	ebscohost
science direct	proquest
jstor	how to get citation of an article

Search for Articles With Google Scholar - University Libraries
libraries.cua.edu/instruct/google.cfm ▼

The CUA library catalog and many of the article databases CUA subscribes to are accessible through Google Scholar. On-campus access.

Google Scholar - Wikipedia
https://en.wikipedia.org/wiki/Google_Scholar ▼

Google Scholar is a freely accessible web search engine that indexes the full text or metadata of scholarly literature across an array of publishing formats and ...

Google Scholar in English
https://scholar.google.com/scholar_ngr ▼

Google Scholar

Google Scholar is a freely accessible web search engine that indexes the full text or metadata of scholarly literature across an array of publishing formats and disciplines. [Wikipedia](#)

Date launched: 20 November 2004
Type of site: [Bibliographic database](#)
Owner: Google

People also search for View 5+ more

Scopus	R ⁶	Gmail	arXiv.org	WEB OF SCIENCE
Scopus	Resea...	Gmail	arXiv	Web of Science

Feedback

Type here to search

4:16 PM 8/26/2018

Finding your research papers

Module: 1819_Serious Games X Databases A-Z | UWS | Universi... X 2,707 Search Results - Keyword X Google Scholar X +

https://scholar.google.co.uk Search

My profile My library SIGN IN

Google Scholar

☒ Articles ☐ Case law

Stand on the shoulders of giants

[Go to Google Scholar](#)

Help Privacy Terms

Type here to search

4:17 PM 8/26/2018

Finding your research papers

Module: 1819_Serious Games X Databases A-Z | UWS | Universi X 2,707 Search Results - Keyword X computer games requirements X +

← → ↺ 🏠 https://scholar.google.co.uk/scholar?hl=en&as_sdt=0%2C5&q=computer Search

Google Scholar computer games requirements collection SIGN IN

Articles About 450,000 results (0.09 sec) My profile My library

Any time
Since 2018
Since 2017
Since 2014
Custom range...

Sort by relevance
Sort by date

☒ include patents
☒ include citations

☒ Create alert

Evaluation of a game to teach **requirements collection** and analysis in software engineering at tertiary education level [PDF] researchgate.net
[T Hainey](#), [TM Connolly](#), [M Stansfield](#), EA Boyle - Computers & Education, 2011 - Elsevier
... The authors felt that there was a dearth of evidence and believed that much more research was required to support the use of **computer games** in education ... 3. Simulating **requirements collection** and analysis using a **games**-based learning approach. 3.1. Game play ...
☆ ⓘ Cited by 137 Related articles All 7 versions

An application of **games**-based learning within software engineering [PDF] savie.ca
[TM Connolly](#), [M Stansfield](#)... - British Journal of ..., 2007 - Wiley Online Library
... potential benefits that can be gained in using **computer games** within teaching and learning, although there are still many critics of this approach. We have been attempting to use a **games**-based learning approach to support the teaching of **requirements collection** and analysis ...
☆ ⓘ Cited by 181 Related articles All 10 versions

[CITATION] A survey of students' motivations for playing **computer games**: A comparative analysis
[T Connolly](#), E Boyle, [T Hainey](#) - ... of the 1st European conference on **games**-based ..., 2007
☆ ⓘ Cited by 32 Related articles

[PDF] Using **games**-based learning to teach **requirements collection** and analysis at tertiary education level [PDF] researchgate.net
[T Hainey](#) - Unpublished PhD Thesis, University of the West of ..., 2010 - researchgate.net
... Page 17. 6 Figure 1.1: Diagram of related chapters 2. Research Methodologies 4. **Computer Games** in Education Literature Review 1. Introduction 6. Evaluation Framework 3. Problems Teaching **Requirements Collection** and Analysis 5. Surveys on game playing habits ...
☆ ⓘ Cited by 46 Related articles All 3 versions ⓘ

The effects of **computer games** on primary school students' achievement and [PDF] psu.edu

Type here to search 4:19 PM 8/26/2018

Finding your research papers

- ▶ If you type in your search terms to Google and put pdf after it then papers will also appear
- ▶ So there are thousands of papers on serious games, games-based learning, computer games for learning in hundreds of subjects
- ▶ This is also very useful for you honours dissertation and you should probably not need to use this phrase:
 - “I can’t find any papers”
 - Any academic that hears this automatically thinks...
 - I used this exact phrase in 2005

New problem

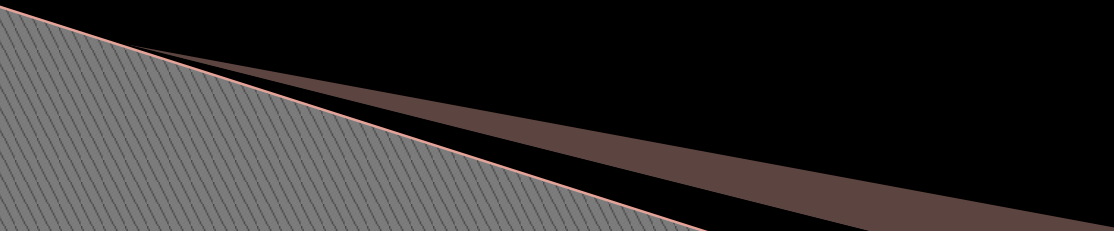
- ▶ Now you probably have too many
- ▶ How do you decide what papers are relevant and are the best to mention in your dissertation or small literature review?



Hierarchy of research papers

- ▶ In terms of academic credence and importance
 - Journal papers
 - Peer reviewed and in a well known journal with an impact factor
 - Conference papers
 - In conference proceedings and have been presented to the academic community
 - Edited Book Chapters
 - Some form of reviewing
 - Books
 - Grey literature
 - Games relevant sites
 - Gamasutra

Reading research papers

- ▶ This is an academic skill
 - ▶ An experienced academic can look at a paper and objectively identify strengths and weaknesses
 - ▶ You seek out the information that you want quickly and efficiently
 - ▶ You don't read a research paper in its entirety unless it is particularly interesting to you
 - ▶ One of our literature reviews identified 7392 papers with 129 being relevant
- 

Reading research papers

- ▶ Firstly establish a list of criteria
 - Use of serious games/games in education
 - Above the age of 14
 - Had some form of empirical evidence associated with the outcome
- ▶ Skim the abstract
- ▶ Skim the conclusions
- ▶ Be able to identify some of the following attributes about the paper

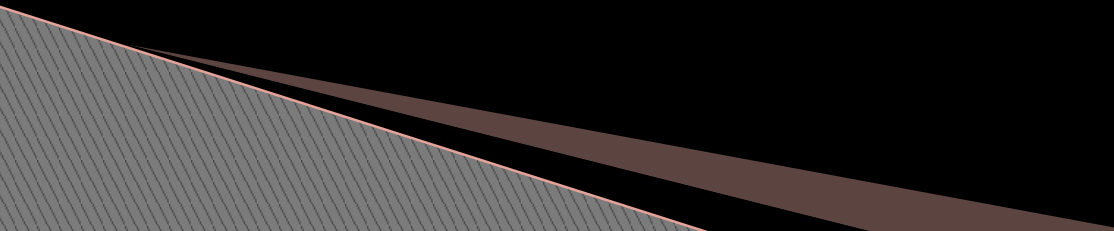
Qualitative and Quantitative

- ▶ Gay and Airasian (1996) state that the underlying belief of qualitative research is *“meaning is situated in a particular perspective or context, and, since different people and groups have different perspectives and contexts, there are many different meanings in the world, none of which is necessarily more valid or true than another.”*

Qualitative and Quantitative

- ▶ Falconer and Mackay (1999) state, *“the assumption underlying the quantitative research approach is that research designs should be based on an objective view of the world and follow the positivist model of controlling variables and testing pre-specified hypotheses.”*

Qualitative and Quantitative

- ▶ Gay and Airasian (1996) relate quantitative research to what the researcher must do, namely:
 - ▶ 1. State the hypothesis and the research procedures that will be employed to conduct the research, prior to the research being conducted.
 - ▶ 2. Attempt to maintain control over factors that could possibly interfere with the data collected.
 - ▶ 3. Use large enough samples to provide statistically meaningful data.
 - ▶ 4. Apply data analysis techniques that rely on statistical procedures.
- 

Qualitative and Quantitative

- ▶ Clark–Carter (2004) believes that *“the distinction between quantitative and qualitative methods can be a false one in that they may be two approaches to study the same phenomena. Or they may be two stages in the same piece of research with a qualitative approach yielding ideas which can then be investigated via a quantitative approach. The problem arises when they provide different answers.”*

Hard and Soft Schools of IS

- ▶ The field of IS is split into two schools of thought being the hard and soft systems inquiry approaches. Hard is the more scientific approach that is based on facts and measurements and soft is a more subjective approach that is based on feelings, perceptions etc. The soft approach is generally seen to be the more human of the two.

Hard and Soft Schools of IS

- ▶ The hard approach to systems development *“assumes firstly that there is a problem to be solved that is logically based and that has a computer solution, and secondly, that the computer solution can integrate well into the organisation, without having taken account of wider social or psychological factors.”*

Hard and Soft Schools of IS

- ▶ The soft approach to systems development “regards the hard approach as being too narrow. It allows for problem situations that may be investigated using a variety of techniques, and it also takes into account the wider organisational context by focusing on social and psychological issues related to the development and impact of an information system in an organisation.”

Qualitative and Quantitative

- ▶ In summary
- ▶ Quantitative – Positivist – Objectivist – Mathematical – Numerical – Statistical – NUMBERS!
- ▶ Qualitative – Interpretivist – Subjectivist – Dialogue – Thematic – Linguistic – FEELINGS!
- ▶ You have to decide which one you are:
 - Quantitative is considered stronger
 - Qualitative is not considered to be unimportant but is generally considered weaker in Computer Science research disciplines
 - Mixed
- ▶ You can basically decide this in a paper by the primary methodology

What Methodology is Utilised? Major Methodologies

- ▶ Experiments
- ▶ Quasi-experiments
- ▶ Correlational
- ▶ Surveys, tests and questionnaires
- ▶ Case studies
- ▶ Observational research
- ▶ Interviews
- ▶ Longitudinal
- ▶ Archival
- ▶ Ethnography
- ▶ Meta-analysis
- ▶ Content analysis

Major Methodologies

- ▶ Sometimes you can get a mixture of methodologies
 - Experiment
 - Follow up interviews
- ▶ Methodology is probably considered to be more important in research papers now and will sometimes be explicitly stated

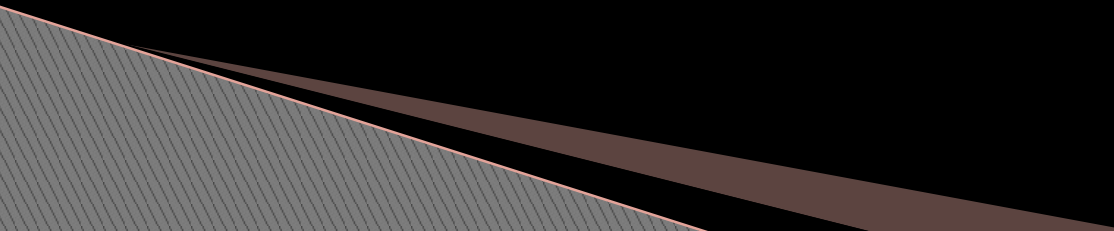
Primary or Secondary?

- ▶ This is quite an easy one
- ▶ Are they undertaking some new research with some new results?
 - The paper should be covered in results
- ▶ Or are they simply presenting a synthesis of results from other people
 - Sometimes this is to bolster a research proposal so you may get some research proposal at the end

What is the Research Design?

- ▶ If there is some form of experiment is it:
 - Pre-test/post-test control group/experimental group
 - Is it randomised? RCT
 - Pre-test/post-test experimental
 - Is it just pre-test or just a post-test?
- ▶ You can see from those designs that quantitative and qualitative techniques can be used

Is the paper empirical or discussional?

- ▶ Empirical evidence is evidence obtained through scientific (numerical) or observational study
 - ▶ If it is presenting some new evidence whether that is quantitative or qualitative then it is empirical
 - ▶ Some poor conference papers will conduct a survey of the literature and try to bolster a new point
 - ▶ Systematic literature reviews are a grey area
 - ▶ A synthesis of the literature is great but still secondary
- 

Are there participants?

- ▶ This should be pretty clear cut
 - Generally the number of participants is explicitly stated
- ▶ Sometimes papers are shady and don't give you all of the information
 - Lennon (2006)
- ▶ Are the numbers consistent?
 - Squire *et al.*, (2004)
- ▶ Does it make sense?

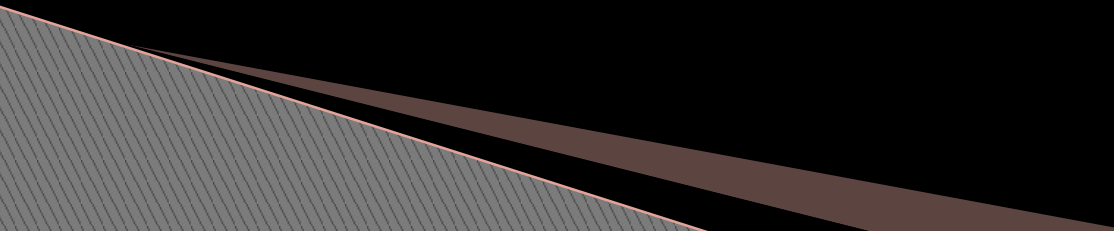
What are the research questions?

- ▶ Sometimes these are explicitly stated
- ▶ Sometimes they are a little more implicit and you have to dig a little deeper or try to draw it out of the paper
 - What is the main purpose of the study?

What are the results?

- ▶ This is something that in your literature reviews for your honours projects and for this modules that the academics want to know
- ▶ Sometimes there can in fact be multiple results
 - In the case of a survey – it may have been trying to find out a few things
- ▶ In the context of this module
 - Was the game better?
 - Was it the same?
 - Was it worse? Than the traditional teaching approach?

What are the limitations?

- ▶ Generally an objective paper will state what the limitations of the study are
 - ▶ The primary limitation associated with games-based learning and serious games is generalisability
 - ▶ You are allowed to highlight research limitations in terms of:
 - Research design
 - Methodology
 - Analysis techniques utilised
- 

Inferential statistics

Selecting an appropriate statistical test

- ▶ Two major factors determine the correct test for any particular set of experimental results. 1) the research design and 2) the nature of the dependent variable, that is the actual data
- 1) Research Design – One-sample design, two-sample designs, k-sample designs, correlations

Inferential statistics

2) Parametric

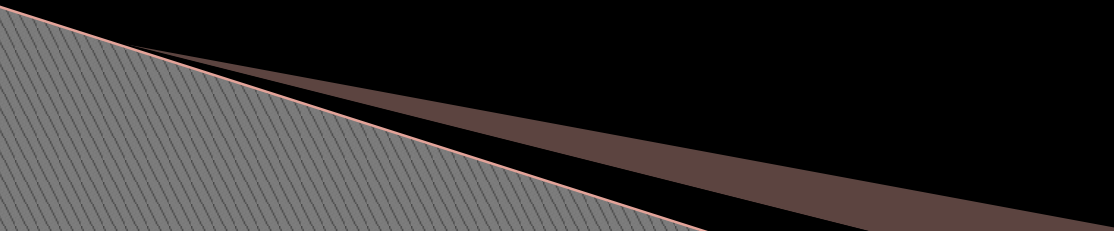
- Normality of distribution – Shapiro-Wilk's W test is a formal test for normality. Kolmogorov-Smirnov (K-S) test or K-S Lillefors test, chi-square test
- Homogeneity of variances – Levene's test, Bartlett's test
- Interval level or ratio level data

Inferential statistics

http://changingminds.org/explanations/research/analysis/parametric_non-parametric.htm

	Parametric	Non-parametric
Assumed distribution	Normal	Any
Assumed variance	Homogeneous	Any
Typical data	Ratio or Interval	Ordinal or Nominal
Data set relationships	Independent	Any
Usual central measure	Mean	Median
Benefits	Can draw more conclusions	Simplicity; Less affected by outliers
Tests		
Choosing	Choosing parametric test	Choosing a non-parametric test
Correlation test	Pearson	Spearman
Independent measures, 2 groups	Independent-measures t-test	Mann-Whitney test
Independent measures, >2 groups	One-way, independent-measures ANOVA	Kruskal-Wallis test
Repeated measures, 2 conditions	Matched-pair t-test	Wilcoxon test
Repeated measures, >2 conditions	One-way, repeated measures ANOVA	Friedman's test

What analysis techniques are used?

- ▶ Can just be basic graphs
 - ▶ Ask yourself if these are used sensibly
 - ▶ Descriptions
 - ▶ Thematic analysis
- 

Checklist

Criteria	
Qualitative/Quantitative?	
Is it primary or secondary?	
What methodology is utilised?	
What is the research design?	
Empirical or discussion?	
Are there participants? How many?	
What are the research questions?	
What are the results?	
What are the limitations?	
What analysis techniques are used?	
Was a control group utilised?	
Reference	

Paper Categorisation Exercise

- ▶ Answer these questions for 6 papers that will be provided