

Definition Discussion

- considering both sides of an issue, or question before reaching a conclusion
- considering the results of research and the implications of results

- * most complex sections in terms of their elements.
- * centered around a 'statement of result' or an important 'finding'
- * multiple results -> series of discussion cycles.
- * language used is very tentative or cautious

Discussion: What does it all mean?

Basic structure:

- Summary:** short summary your main findings
- Comparison:** discuss each finding in the context of the literature (What do the papers say?)
- Conclusion:** provide broader perspective (What is the big theme of our story?)

Discussion: End the way you started

A. Opening wider than resolution: overpromising. Your readers will feel cheated.

B. On target. Your readers will be satisfied.

C. Resolution wider than opening: underpromising. Your readers won't ever see that you are telling a story that would interest them.

What is the big question of our paper?

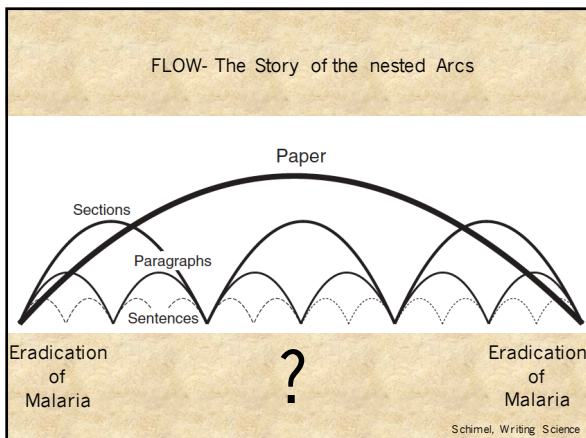
FLOW- The Story of the nested Arcs

The diagram illustrates the nested structure of a paper. It shows four levels of arcs: Paper (outermost), Sections, Paragraphs, and Sentences (innermost). The arcs are nested, showing how each level builds upon the previous one. The text 'Treatment of Malaria' is written on both sides of the diagram, with a large question mark in the center.

Treatment of Malaria

Treatment of Malaria

Schimel, Writing Science



Discussion: What does it all mean?

Pay attention to:

1. past tense for experimental descriptions
2. present tense for conclusions and text book statements
3. active voice 'We' for your findings
4. use of formal linker phrases (However, In contrast, Furthermore, In addition, While A, not B)

Discussion – Tense use

* Description of own action: past tense

Example: Here we **showed** that

* Results as Facts or Conclusions: present tense

Example: Example: ...A **binds** to B.

-> Here we **showed** that A **binds** to B.

Common **Problems** in Discussion

- * Detailed description of every single result
- * Referring to specific Figures (see Fig. 1)
- * Repeat of Introduction
- * Lack of Precision

-> Discuss, evaluate, criticize - do NOT describe again

Phrases for previous reports

Providing background information: reference to literature

Several reports have shown that ...
 As mentioned in the literature review, ...
 Prior studies that have noted the importance of ...
 Very little was found in the literature on the question of ...
 Previous studies evaluating X observed inconsistent results on whether ...
 A strong relationship between X and Y has been reported in the literature.
 In reviewing the literature, no data was found on the association between X and Y.

Phrases for scientific questions

Providing background information: reference to the question

The third question in this research was ...
 An initial objective of the project was to identify ...
 The first question in this study sought to determine ...
 It was hypothesised that participants with a history of ...
 The present study was designed to determine the effect of ...
 With respect to the first research question, it was found that ...
 This study set out with the aim of assessing the importance of X in ...

Phrases for Results

Restating the result or one of several results

One interesting finding is ...
 The current study found that ...
 Another important finding was that ...
 The most interesting finding was that ...
 In this study, Xs were found to cause ...
 The results of this study show/indicate that ...
 On the question of X, this study found that ...
 This experiment did not detect any evidence for ...
 The most important clinically relevant finding was ...
 X provided the largest set of significant clusters of ...
 It is interesting to note that in all seven cases of this study ...
 The most obvious finding to emerge from the analysis is that ...
 In the current study, comparing X with Y showed that the mean degree of ...
 The results of this study did not show that .../did not show any significant increase in ...

Phrases for outcomes

Indicating an unexpected outcome

Surprisingly, X was found to
 What is surprising is that
 One unanticipated finding was that
 Surprisingly, no differences were found in
 This finding was unexpected and suggests that
 It is somewhat surprising that no X was noted in this condition
 Contrary to expectations, this study did not find a significant difference between
 However, the observed difference between X and Y in this study was not significant.
 However, the ANOVA (one way) showed that these results were not statistically significant.

Phrases for outcomes

Comparing the result: supporting previous findings

This study confirms that X is associated with ...
 This finding was also reported by Smith *et al.* (1989).
 This finding is consistent with that of Smith (2000) who ...
 Comparison of the findings with those of other studies confirms ...
 This also accords with our earlier observations, which showed that ...
 These results reflect those of Smith *et al.* (1992) who also found that ...
 Increased activation in the X in this study corroborates these earlier findings.
 These results corroborate the findings of a great deal of the previous work in ...
 This finding broadly supports the work of other studies in this area linking X with Y.
 In accordance with the present results, previous studies have demonstrated that ...
 It is encouraging to compare this figure with that found by Jones (1993) who found that ...
 Consistent with the literature, this research found that participants who reported using X also ...
 This study supports evidence from previous observations (e.g. Smith, 2006; Jones *et al.*, 2011).
 There are similarities between the attitudes expressed by X in this study and those described by ...

Comparing the result: supporting previous findings

These results	further support the idea of ... confirm the association between ... are consistent with data obtained in ... match those observed in earlier studies. are in line with those of previous studies. are in agreement with those obtained by ... are in accord with recent studies indicating that ... seem to be consistent with other research which found ... are consistent with those of Smith and Jones (2015) who ... are in agreement with Smith's (1999) findings which showed ... support previous research into this brain area which links X and Y. corroborate the ideas of Smith and Jones (2008), who suggested that ...
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Phrases for outcomes

Comparing the result: contradicting previous findings

This study has been unable to demonstrate that ...
 However, this result has not previously been described.
 This outcome is contrary to that of Smith *et al.* (2001) who found ...
 This finding is contrary to previous studies which have suggested that ...
 In contrast to earlier findings, however, no evidence of X was detected.
 The yields in this investigation were higher compared to those of other studies.
 However, the findings of the current study do not support the previous research.
 Smith *et al.* (1999) showed that ... This differs from the findings presented here ...
 The overall level was found to be 15%, lower than that of previously reported levels.
 It has been suggested that ... (Smith *et al.*, 2002). This does not appear to be the case.
 The levels observed in this investigation are far below those observed by Smith *et al.* (2007).
 These results differ from X's 2003 estimate of Y, but they are broadly consistent with earlier ...

Phrases for explanations

Offering an explanation for the findings - close

A possible explanation for this might be that ...
 Another possible explanation for this is that ...
 This result may be explained by the fact that ...
 There are, however, other possible explanations.
 These relationships may partly be explained by ...
 There are several possible explanations for this result.
 A possible explanation for these results may be the lack of adequate ...
 These differences can be explained in part by the proximity of X and Y.
 These factors may explain the relatively good correlation between X and Y.

Phrases for findings

Offering an explanation for the findings

This inconsistency may be due to ...
 These results are likely to be related to ...
 This discrepancy could be attributed to ...
 It seems possible that these results are due to ...
 This rather contradictory result may be due to ...
 The observed increase in X could be attributed to ...
 It is difficult to explain this result, but it might be related to ...

Phrases for outcomes

Offering an explanation for the findings

The possible interference of X cannot be ruled out.
 It may be that these participants benefitted from ...
 Differences between X and Y may have influenced ...
 These possible sources of error could have affected ...
 There are two likely causes for the differences between ...
 The reason for this is not clear but it may have something to do with ...
 The observed correlation between X and Y might be explained in this way:
 ...
 Since this difference has not been found elsewhere it is probably not due to ...

Phrases for uncertainty

Advising cautious interpretation of the findings - close

Another source of uncertainty is ...
 A note of caution is due here since ...
 These findings may be somewhat limited by ...
 These findings cannot be extrapolated to all patients.
 These data must be interpreted with caution because ...
 It could be argued that the positive results were due to ...
 These results therefore need to be interpreted with caution.
 In observational studies, there is a potential for bias from ...
 It is important to bear in mind the possible bias in these responses.
 Although exclusion of X did not ..., these results should be interpreted with caution.
 However, with a small sample size, caution must be applied, as the findings might not be ...

Phrases for proposals

Suggesting general hypotheses - close

It is possible, therefore, that ...
 It can thus be suggested that ...
 In general, therefore, it seems that ...
 It may be the case therefore that these variations ...
 It is therefore likely that such connections exist between ...
 It is possible to hypothesize that these conditions are less likely to occur in ...
 These findings suggest that ...
 According to these data, we can infer that ...
 This observation may support the hypothesis that ...
 Hence, it could conceivably be hypothesized that ...
 The value of X suggests that a weak link may exist between ...
 These results provide further support for the hypothesis that ...
 Therefore, X could be a major factor, if not the only one, causing ...

Phrases for implications

Noting implications of the findings

It can therefore be assumed that the ...
 An implication of this is the possibility that ...
 The present study raises the possibility that ...
 One of the issues that emerges from these findings is ...
 Some of the issues emerging from this finding relate specifically to ...
 These findings may help us to understand ...
 This finding, while preliminary, suggests that ...
 This finding has important implications for developing ...
 This observational study suggests that a diet rich in X may help prevent ...
 These findings raise intriguing questions regarding the nature and extent of ...
 This combination of findings provides some support for the conceptual premise that ...

Phrases for negative outcomes

Commenting on the findings

These findings are rather disappointing.
 However, these results were not very encouraging.
 The test was successful as it was able to identify students who ...
 The present results are significant in at least two major respects.
 The results of this study do not explain the occurrence of these adverse events.
 These findings will doubtless be much scrutinized, but there are some immediately dependable conclusions for ...

Phrases for future work

Giving suggestions for future work - close

This is an important issue for future research.
 Research questions that could be asked include ...
 There are still many unanswered questions about ...
 Several questions remain unanswered at present.
 Despite these promising results, questions remain.
 Further work is required to establish the viability of...
 Further research should be undertaken to investigate the ...
 There is abundant room for further progress in determining ...
 A further study with more focus on X is therefore suggested.
 Future studies on the current topic are therefore recommended.
 To develop a full picture of X, additional studies will be needed that ...
 In future investigations, it might be possible to use a different X in which ...
 Further studies, which take these variables into account, will need to be undertaken.

Phrases for Conclusion

Suggesting implications for the field of knowledge - close

In general, therefore, it seems that ...
 The results of this study indicate that ...
 These findings suggest that in general ...
 The findings of this study suggest that ...
 Taken together, these results suggest that ...
 An implication of this is the possibility that ...
 The evidence from this study suggests that ...
 Overall, this study strengthens the idea that ...
 The current data highlight the importance of ...
 The findings of this research provide insights for ...
 The results of this research support the idea that ...
 These data suggest that X can be achieved through ...
 The theoretical implications of these findings are unclear.
 The principal theoretical implication of this study is that ...
 This study has raised important questions about the nature of ...
 The following conclusions can be drawn from the present study ...
 Taken together, these findings suggest a role for X in promoting Y.
 The findings of this investigation complement those of earlier studies.
 These findings have significant implications for the understanding of how ...
 Although this study focuses on X, the findings may well have a bearing on ...

Phrases for future work

Making recommendations for further research work

The question raised by this study is ...
 The study should be repeated using ...
 This would be a fruitful area for further work.
 Several questions still remain to be answered.
 A natural progression of this work is to analyse ...
 More research using controlled trials is needed to ...
 More broadly, research is also needed to determine ...
 The precise mechanism of X in insects remains to be elucidated.
 These findings provide the following insights for future research: ...
 Large randomised controlled trials could provide more definitive evidence.
 This research has thrown up many questions in need of further investigation.
 A greater focus on X could produce interesting findings that account more for ...
 The issue of X is an intriguing one which could be usefully explored in further research.
 If the debate is to be moved forward, a better understanding of X needs to be developed.
 I suggest that before X is introduced, a study similar to this one should be carried out on ...
 More information on X would help us to establish a greater degree of accuracy on this matter.

Phrases for future work

Further

work needs to be done to establish whether ...
 studies need to be carried out in order to validate ...
 studies regarding the role of X would be worthwhile.
 experimental investigations are needed to estimate ...
 work is needed to fully understand the implications of ...
 research is required to establish the therapeutic efficiency of ...
 modelling work will have to be conducted in order to determine ...
 investigation and experimentation into X is strongly recommended.
 experiments, using a broader range of Xs, could shed more light on ...
 research in other Xs is, therefore, an essential next step in confirming ...

Phrases for future work

Further research

might explore ...
 could usefully explore how ...
 should focus on determining ...
 is required to determine whether ...
 in this field would be of great help in ...
 should be carried out to establish the ...
 should be undertaken to explore how ...
 on these questions would be a useful way of ...
 needs to examine more closely the links between X and Y.
 could also be conducted to determine the effectiveness of ...

Use in singular Equipment Research Information Knowledge Evidence work	Delete A few obviously some Actually always	Replace Besides, All in all, In a nutshell, Conclusively, The first thing To sum up, On the contrast,	Avoid (verbs) Let put, get, do Make You Other phrasal verbs Avoid To be verbs (is) Do verbs Have verbs	Avoid (pronouns) They I You It (referring to noun) ...to us, us We (other than authors)
Delete (adjectives) Terrible careful	Replace Roughly About	Replace Now, Later, Eventually So, Nowadays There is/there are Of them	Avoid (linkers) Meanwhile, So, In my opinion, As we all know, That is, In fact, Knowing these, It is said That way In a word	Avoid (conjunctions) And... But... While... Though... Whether... Avoid Apostrophes Run-on expressions Contractions The + summary word
Delete (modifiers) Really Massive Huge Gigantic Bigger and bigger			Look out for Noun strings Too many abstract nouns Too many lazy verbs Too many 'there is/are/were' Uninformative adjectives Too many comma Subject-verb disagreement Incorrect use of articles Too much hedging	Avoid Can/could/would Should Ought to Must be
Pay attention Verbs + that Verbs - that	Pay attention Recently + past	Pay attention Use of 'respectively'		