Written evidence

Members of the Oracy APPG will consider written, verbal and audio-visual evidence and oversee oral evidence sessions. All evidence will inform the final report.

The extended deadline for submitting written evidence is 20th September 2019. We would appreciate if the submissions would follow the following guidelines:

- Be in a Word format
- No longer than 3000 words
- State clearly who the submission is from, and whether it is sent in a personal capacity or on behalf of an organisation
- Begin with a short summary in bullet point form
- Have numbered paragraphs
- Where appropriate, provide references

Please write your evidence below and email the completed form via email to inquiry@oracyappg.org.uk with the subject line of 'Oracy APPG inquiry'

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On behalf of The Royal Institution[1] and British Science Association[2]
School or Organisation:

Science Coordinator
Role:

Written evidence:

1. Summary

- *Oracy is important as a way of tackling ethical and social implications that are not 'factual'*
- *Oracy within the sciences has been under-prioritised for many years and this remains true today*
- *It is possible to teach science in a way that emphasises oracy skills, which can improve assessment outcomes*
- *But this requires teachers to use pedagogies they may be uncomfortable with or have not had much experience in*
- *Recent developments in oracy resources gives teachers an easy entry point into spoken language education*
- *However, until we find methods to assess oracy education within all subjects, including the sciences, it will continue to be a systemically under-prioritised area*

2. Introduction

It is often assumed that children will naturally develop oracy skills as they progress through school. However, many do not. This sets them at a major disadvantage, not only in terms of social acceptance [1], but also in terms of how well they can communicate ideas and concepts – skills vital for employment in the 21st Century.

It is our opinion that oracy education has been, and continues to be, under-prioritised within the sciences and that this has negative impacts for students, as well as science education. Within this submission we aim to present evidence on how oracy in the sciences is under-valued, where oracy pedagogies have succeeded within the sciences, and how science teachers can easily implement such pedagogies into their lessons in ways that have positive educational outcomes.

3. Barriers to oracy education within the sciences

There is considerable evidence to suggest that oracy is less valued in science education than in other subjects. Voice 21 found that science teachers were much less likely to believe that their subject lent itself towards oracy-based activities than both English and history teachers, who believe that their subjects strongly lend themselves to oracy-based activities [2]. Considering that history and science are similar in their reliance on high levels of factual content, it is surprising that history teachers feel so differently from science teachers about how easy it is to implement oracy-based methodologies within their subject. Both science and history require a lot of factual knowledge recall and it is our opinion that discussions and presentations can only help towards this.

Heitmann came to a similar conclusion, but her work looked at students' views on oracy in language versus science education. It was found that discursive speech was thought more essential within language education than it was in science education, where the knowledge of facts was deemed much more important [3]. We agree that acquisition of knowledge is a priority in science education, but whilst this is necessary, it is not sufficient. Scientific research is often heavily debated and there isn't always a clear-cut answer, consequently it is essential for scientists of all types to be competent at communicating and discussing their ideas.

Considering the evidence presented by Voice 21 and Heitmann, to improve science education there needs to be a change in mindset about the importance of oracy-based pedagogies in the sciences for teachers and students alike. The Wellcome Trust's Report on young people's views in science education put an interesting perspective on this problem. It suggests that students wish to move away from 'chalk and talk' style learning approaches towards more innovative and engaging pedagogies [4]. As a result, and despite the evidence suggesting oracy-based activities are thought by teachers and students to be of lesser importance within the sciences than in other subjects, we are confident that students have an appetite for different teaching methodologies that emphasise oracy.

4. How can oracy education benefit science education?

Even though students and teachers do not always value oracy within science education, there have been examples where oracy has improved knowledge attainment within the science classroom. This concept has been around for a long time – that social activity will promote individual intellectual development [5] – and it has been shown to be true within science education on several occasions. Researchers have studied the effects of different oracy pedagogies for science education and have found they can improve knowledge assessment outcomes and communication skills compared against control groups. Mercer et al. created a study designed around the 'Thinking Together' initiative where children used 'Exploratory Talk' to understand scientific topics. The students part of the 'Thinking Together' initiative achieved significantly higher results in science SATs questions (13% improvement) compared to the control group [6]. Similar findings were shown by Dawes et al. where 'Exploratory Talk' improved the learning attainment of children compared to the control group [7]. In addition to 'Exploratory Talk', education through other oracy-based pedagogies have been shown to improve students' knowledge attainment within science education [8] [9] [10]. With this evidence in mind, we are confident oracy-based education methods are likely to enable students within the sciences to perform at a higher standard, even when assessed using traditional methods.

5. Oracy education requires science teachers to move out of their comfort zone

Although the benefits of oracy education in the sciences have been well demonstrated, these pedagogies are not foolproof. One of the key issues with the application of oracy-based activities is that when this pedagogy is executed badly, students can perform less well than if they had been taught via the 'chalk and talk' style learning approaches which are the current standard of science education. It has been shown that students perform consistently well when learning through 'chalk and talk', but there are much wider variations in student performance after education through oracy-based methodologies (e.g. inquiry-based science education (IBSE) [11]). Classes that are ill-disciplined have lower attainment when using this pedagogy, although students report finding this style of learning more engaging and enjoyable. As such, if – as we recommend – there is movement towards using more oracy-based activities within the sciences, then it is fundamental to implement a clear teaching framework [12] [13] so that teachers know how to use oracy-based activities to a high standard. There are already some resources available that should help this transition in science education

6. Implementing oracy education in the sciences

One of the easiest ways to implement oracy education seamlessly into the science classroom is to have resources for teachers to use that help students develop their spoken-language skills. There are already many available resources that aim to do just this. For example, the Royal Institution has designed debate kits to help students discuss current scientific topics. They are devised to engage young people and improve their knowledge whilst also working to improve their scientific spoken language and communication skills. These kits are being used by 'the Noisy Classroom' [14] to explore science alongside more traditional debate topics. In addition, the British Science Association's (BSA) CREST Awards also set precedent for science oracy resources, especially for younger students (e.g. the Star, Superstar and Discovery level awards) [15]. They are designed to improve communication, problem solving, and teamwork skills, whilst inspiring young students to think like scientists. Similarly, the Cheltenham Science Festival FameLab Academy [16] and Theatre of Debate [17] focus on science oracy development for young people using innovative methodologies that are useful to look to when thinking about novel resource development. It is vital to have good quality resources in place to shape oracy education, although the effectiveness of this could be improved with a suitable way to assess students on the skills that they have developed once oracy education has been implemented.

7. Assessment is the key

The current curriculum states 'teachers should ensure that pupils build secure foundations by using discussion to probe and remedy their misconceptions.' [18] In this way, there is some emphasis on spoken language education within the science curriculum, but there is little emphasis on how to do this – especially when compared against the English curriculum. It would be beneficial for there to be some assessment of oracy-based activities to enable teachers to prioritise activities that will improve students' spoken language skills. If there is no assessment of oracy within science, then it is unlikely that such a pedagogy will be adopted.

8. Conclusion

We believe that more emphasis should be put on oracy education within the sciences, where it is of lesser value than in other subjects (e.g. English and history). Oracy-based pedagogies can improve science education when taught well. However, if carried out poorly, students can perform less well than when taught by 'chalk and talk'. The effects of this can be mitigated by using the well-designed resources available, but in order to change science pedagogy in the long term, we must create an oracy assessment strategy which ensures that spoken language education is being implemented at a high standard across all subjects, including the sciences.

9. References

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Additional guidance:

Value and impact

1. Given many teachers recognise the importance of oracy, why does spoken language not have the same status as reading and writing in our education system? Should it have the same status, and if so why?

2. What are the consequences if children and young people do not receive oracy education?

3. What is the value and impact of quality oracy education at i) different life stages, ii) in different settings, and iii) on different types of pupils (for instance pupils from varied socioeconomic backgrounds or with special educational needs)?

4. How can it help deliver the wider curriculum at school?

5. What is the impact of quality oracy education on future life chances? Specifically, how does it affect employment and what value do businesses give oracy?

6. What do children and young people at school and entering employment want to be able to access, what skills to they want to leave school with?

7. What is the value and impact of oracy education in relation to other key agendas such as social mobility and wellbeing/ mental health?

8. How can the ability to communicate effectively contribute to engaging more young people from all backgrounds to become active citizens, participating fully in social action and public life as adults

Provision and access

1. What should high quality oracy education look like?

2. Can you provide evidence of how oracy education is being provided in different areas/education settings/extra-curricular provision, by teachers but also other practitioners that work with children?

3. What are the views of teachers, school leaders and educational bodies regarding the current provision of oracy education?

4. Where can we identify good practice, and can you give examples?

5. What factors create unequal access to oracy education (i.e. socio-economic, region, type of school, special needs)? How can these factors be overcome?

6. Relating to region more specifically, how should an oracy-focused approach be altered depending on the context?

Barriers

1. What are the barriers that teachers face in providing quality oracy education, within the education system and beyond?

2. What support do teachers need to improve the delivery of oracy education?

3. What accountability is currently present in the system? How can we further incentivise teachers to deliver more oracy education to children and young people?

4. What is the role of government and other bodies in creating greater incentives and how can this be realised?

5. What is the role of assessment in increasing provision of oracy education? What is the most appropriate form of assessment of oracy skills?

6. Are the speaking and listening elements of the current curriculum sufficient in order to deliver high quality oracy education?

7. What is the best approach – more accountability within the system or a less prescriptive approach?

8. Are there examples of other educational pedagogies where provision has improved, and we can draw parallels and learn lessons?