

# **Section 2. Introduction as an IMRD component**

Unit 3. Introduction: Vocabulary  
features

Today we are going to talk about Vocabulary features of the Introduction section taken from our Introduction section model. We will learn how writers:

- Establish the importance of the field;
- Describe previous and/or current research and contributions;
- Locate a gap in the research;
- Briefly outline the paper.

To establish the **importance of the field** writers use phrases such as “Much research in recent years.”

To **describe previous and/or current research** and contributions writers need verbs describing what researchers did: *calculated, monitored, etc.* Instead of just using did, showed and found. They need to use these verbs in the *Past Simple*.

To **establish the gap/problem/ question/prediction**, writers may use the words or phrases like: “However, few studies have focused on...”

To **describe the present work/paper** writers may use phrases like: “The aims of the present work are as follows...”

Now try to find the words and phrases that you think could be used in the seven areas we have identified. Then keep watching the video and we will check it together. Back to me? Let's check what you have identified.

“Have gained significant attention” - in this text is indicative of an overview of the materials. Other lexical units that are typical for this section are the words or phrases presented on your screen. You can see that they all contribute to the idea of attention paid in the sphere to this problem.

## **Writers can emphasize the importance in five ways:**

- by using key terminology;
- by highlighting industrial applications;
- by emphasizing advancements and innovations;
- by referencing research contributions;
- by discussing societal relevance.

Let's consider these ways in more detail.

Using **key terminology** means *incorporating specific terms* related to alloys that emphasize their importance. For instance, terms such as “metallic alloys,” “composition,” “microstructure,” and “mechanical properties” can showcase the complexity and relevance of the field.

The example on your slide: “Metallic alloys, composite materials formed by combining two or more metallic elements, are widely utilized in various industries due to their exceptional mechanical properties and versatility.” - shows some terms used in the sentence.

**Highlighting industrial applications** means *discussing the practical applications* of alloys in different industries to emphasize their importance in real-world contexts. Present Perfect is often used in this respect. The example: “Alloys have revolutionized the aerospace industry by providing lightweight yet strong materials for aircraft construction, enhancing fuel efficiency and ensuring passenger safety.” - showcases the impact of alloys in specific sectors such as aerospace.

**Emphasizing advancements and innovations** relates to *discussion of recent advancements* or breakthroughs in alloy research. The vocabulary here serves to emphasize cutting-edge technologies, novel alloy compositions, or innovative manufacturing techniques. “The development of nanocrystalline alloys, with grain sizes” and “Has opened new avenues”– are the examples in my sentence on your screens.

**Referencing research contributions** means *citing influential studies* or researchers who have made significant contributions to the field- in our case, to the field of alloys. The writers incorporate vocabulary that highlights their work and its impact on the understanding or application of alloys. “It has been generally accepted” with the references in square brackets at the end of the sentence clearly shows the writer did a lot of reading and found certain agreement on a certain thing among other researchers in the field.

**Discussing societal relevance** corresponds to highlighting how – in our case - alloys contribute to addressing societal challenges or improving quality of life. In the given example the writer uses the highlighted vocabulary that emphasizes the role of alloys in medical advancements.

Other examples may include the following phrases: “Numerous experiments have established that,...something has generated considerable recent research interest, some things are attracting widespread interest in fields such as...” or “Much research in recent years has focused on...”

In our model Introduction we highlighted the words that refer to previous research in the field. Here you can see some of the verbs used to relate to previous or current research and contributions. This part of the introduction is usually called **Literature Review** and can be written as a separate paragraph or integrated into the text of the section. Let's look at some examples:

1. In recent years, significant progress has been made in understanding the mechanical behavior of high-strength aluminum alloys. SMITH et al. (2019) demonstrated that ...
2. The work of Johnson and Brown (2017) has shed light on the effect of grain boundaries on the corrosion resistance of stainless steel alloys. Their findings revealed that...
3. Previous studies by Thompson et al. (2018) have focused on the influence of heat treatment parameters on the microstructure and mechanical properties of titanium-based alloys. Their research demonstrated that...

In our sample Introduction the gap in the research is established through such words as *however, although, little attention has been paid to*.

**Establishing the research gap** or problem in the introduction of a research paper on alloys involves using specific vocabulary to highlight the need for further investigation or the absence of sufficient understanding in a particular area. This can be done in three ways:

- by identifying existing knowledge gaps;
- by highlighting unresolved issues or challenges;
- by addressing practical or industrial needs.

Let's consider them all in more detail.

Number One. **Identifying existing knowledge gaps.**

Writers can use vocabulary to indicate areas where knowledge or understanding is lacking within the field of alloys. This can involve highlighting unanswered questions, unexplored phenomena, or limitations in previous research. "There remains a knowledge gap regarding the influence of ..." in the first example and "There is a lack of comprehensive studies..." in the second example are indicative of the gap in the existing knowledge.

Number two. **Highlighting unresolved issues or challenges.**

Vocabulary can be employed to draw attention to unresolved issues or challenges within the field of alloys. This helps establish the need for further investigation to address these issues. In the first example this is translated by means of "faces challenges" and in the second one – with the words: "Remains limited calling for detailed investigation."

Number three. **Addressing practical or industrial needs.**

Writers can use vocabulary to highlight the practical or industrial needs that require further research in the field of alloys. This can involve emphasizing the demand for specific properties, cost-effective solutions, or novel applications. "A pressing need for structural applications" and "The aerospace industry requires for critical components" clearly illustrate what I mean.

Other **words that signal the gap** or the problem include phrases like: few studies have..., little work has been done, more work is needed. *Adjectives*: impractical, inaccurate, incomplete. And *nouns* like: (the) absence of, (an) alternative approach, (a) challenge. *Conjunctions*: however, although, despite, etc.

**Highlighted** here are the words that help the writer describe the present paper. To describe the paper writers may use the following *verbs* such as: (to) facilitate, (to) illustrate, (to) improve, (to) minimize etc. *Phrases like*: (this) work, close attention is paid to, here etc. *Adjectives*: simple, straightforward, successful, valuable, etc. *Nouns*, like: aim, goal, purpose, objective, etc.

The examples illustrate how writers describe the present work or paper in the Introduction section of research papers on alloys. By outlining the specific objectives, methods, and focus of their study, writers can provide readers with a clear understanding of the scope and contribution of their research within the field of alloys.

To sum up, you have learnt different ways writers can Establish the importance of the field; Refer to previous and/or current research and contributions; Locate a gap in the research; and Provide a brief outline of the paper. So, in our next section you will learn about basic components of the methodology section, its grammar peculiarities and vocabulary features.