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## Instructional Materials: A Comprehensive ChatGPT-Assisted Definition

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### ABSTRACT

Theories and applications in the field of education are interconnected. Thus, stakeholders in education—teachers and instructional leaders in particular—would benefit from having a thorough understanding of important educational terms, like *instructional materials*, for this could lead to better understanding and realization of teaching-learning results. To attain the main objectives of the study, the researcher conducted a thorough related literature search and examination of the definitions/descriptions of the term in order to analyze the meanings from different authors. Then, with the aid of the ChatGPT, the researcher eventually created a comprehensive definition of the term and determined what resources were qualified and those that did not fall in the category of the term. Although authors provided diverse definitions and meanings of the term, they generally converged on defining them as resources employed by educators to facilitate the teaching-learning process. The primary purpose of instructional materials is to support the teaching process, stimulate students' interest, and improve knowledge retention by providing realistic and experiential learning opportunities. Likewise, to foster positive student outcomes by enhancing engagement, concretizing ideas, and complementing traditional teaching methods. Instructional materials are essential for the accomplishment of teaching-learning objectives and goals, which set them apart from resources that do not have direct educational function or those resources that do not directly contribute to the teaching-learning process.

### KEYWORDS

Instructional materials, comprehensive definition, resources to facilitate instruction, ChatGPT, UN sustainable goals

#### 1. Introduction

With technological advancement, globalization, and emergent knowledge driving rapid changes in the educational landscape, teachers and instructional leaders at all levels and different areas or fields of knowledge like mathematics, communication arts, science, technology education, and other fields of expertise need to keep upskilling and updating themselves with the competencies they need to cope with the demands of their profession.

More specifically, in order to fulfill their roles as efficient facilitators of the teaching and learning process, they must stay updated with precise definitions of important education topics and terms, such as *instructional materials*. Sustaining quality education in line with the 17 United Nations Sustainable Development Goals (UNSDGs) depends on this awareness and commitment for continuous professional growth. Since *quality education*, the UNSDG 4, gives people the tools to overcome poverty and promotes wider societal growth, it is recognized as the key that enables the achievement of many other UNSDGs (The Global Goals, Quality Education, n.d.).

In line with the aforementioned, the precise use of language, specifically a significant term like *instructional materials* (henceforth, *instructional material*, the *term instructional materials* or the *term* for the singular form; and *instructional materials* for the plural form, respectively) is critical, particularly when talking about complex and significant ideas. This rule applies to both scientific discourse and terms that relate to education contexts. According to Shipman (2013), the improper use of technical terms can confuse meanings and make communication more difficult. This problem is particularly with how the term *instructional materials*, a significant term in the teaching-learning process, is used. In the same way that scientific terms,

like *mass* and *cell*, can be misunderstood if they are not defined precisely, the term *instructional materials* also needs a comprehensive definition to prevent misunderstandings and misapplication. Ping and Hong (2021, as cited in Issah et al., 2024) assert that in the modern educational paradigms, the significance of instructional materials in promoting effective teaching and learning in educational institutions is widely acknowledged.

Thus, teachers, students, parents, government officials, school administrators, and other interested parties are among the stakeholders that need to make sure that they have a precise and common understanding of the aforementioned term.

*What are instructional materials and what constitute them?* To answer the preceding question, there is a need of a focused study into standards utilized to define the term instructional materials in order to provide a correct response based on the identified context. It suggests a critical analysis of the relevant literature about instructional materials that are deemed valid and important, as well as addressing those resources that are outside of the category.

It is crucial to define a key term in teaching-learning process, specifically instructional materials, for a number of reasons. One explanation for this is that it promotes mutual understanding and clarity among teachers, administrators, students, parents, and other stakeholders in education. In particular, a precise definition makes it easier for everyone to understand what kinds of materials—textbooks, modules, digital presentation materials, indigenous materials, and other library resources—qualify as or are included in the instructional material category. Most significantly, it guarantees uniformity throughout the educational field, facilitating efficient communication among curriculum planners and designers, implementers, and evaluators; thus, preventing misunderstandings about which materials or resources are genuinely included in this category.

Similarly, the curriculum developers could benefit greatly from having a clear definition for instructional materials since it helps them in the process of content or subject matter creation and selection that is in line with learning goals, objectives, and standards. Additionally, it makes assessment and evaluation easier, allowing educators to analyze how well the materials fulfill the learning objectives and course outcomes. More importantly, having a term that is clearly defined helps to preserve fairness and openness in educational procedures by ensuring that schools allocate budget and other resources appropriately and adhere to policy and legal requirements.

Undoubtedly, instructional materials play a crucial role in contemporary education by offering teachers and students vital resources needed to facilitate teaching-learning processes. The divergent definitions by many authors about the term, however, reflect its complexity and broadness, thus, the researcher aims to develop the comprehensive definition of the term instructional materials, which is the main objective of this study, and to utilize the popular generative Artificial Intelligence (AI) chatbot, developed by OpenAI—specifically the Chat Generative Pre-trained Transformer or ChatGPT to provide the needed assistance. As to the usefulness of ChatGPT, Bhullar et al. (2024), publish that:

people have found value in using ChatGPT for a wide range of purposes, including generating creative content, answering questions, providing explanations, offering suggestions, and even having casual conversations (Crawford et al., 2023; Throp, 2023; Wu et al., 2023). Furthermore, ChatGPT is an effective digital assistant for facilitating a thorough understanding of diverse and intricate subjects using simple and accessible language. (para. 2)

The *comprehensive definition of instructional materials*, is operationally defined as the definition of the term instructional materials that is developed based on the purposively chosen definitions of the term published by various authors in selected journals, is created by the researcher (with the assistance of the ChatGPT) in order to achieve the main objective of the study.

## 2. Objectives

More specifically, this study answers the following questions:

- a. What is a comprehensive definition of the term instructional materials?
- b. What learning resources qualify as instructional materials, and what do not?

## 3. Methodology

The following activities were followed by the researcher (aligned with Dankasa's, 2015, p. 65 study) to answer the main objective of the study, and to answer the specific study questions:

- a. After finalizing the research objectives, the researcher conducted various searches to look for articles about and related to the term *instructional materials*. Search terms such as *instructional materials*, *what is instructional materials*, *what are instructional materials*, *instructional materials defined*, *instructional materials definitions*, and *instructional materials researches* were used to identify relevant literature and publications conducted in this research area. Electronic databases such as the Google, Google Scholar, and other institutional library databases were used in the search for materials. The major sources retrieved and used for this research were journal articles. Some books that published important concepts about the study were also reviewed. There were 54 journal articles that were retrieved because of their relevance to the study and scope of the paper;

b. Then, the researcher comprehensively reviewed and analyzed the various research papers and purposively selected seven journals, which published 15 definitions and/or descriptions by 15 authors or researchers (see Table 1) in order to get a better understanding of the term instructional materials. There was no limit set for the year of publication of the sources, it was noted, however, that the “oldest” article that published the definition of instructional materials was published in 1990, while the most current was published in 2022;

c. To answer the research question number 1, (see Table 1), the comprehensive definition was developed through the assistance of the popular generative Artificial Intelligence (AI) chatbot, developed by OpenAI, specifically the Chat Generative Pre-trained Transformer or ChatGPT (Bhullar et al., 2024); and

d. To answer to the question, “What learning resources qualify as instructional materials, and what do not?”, the researcher, utilized the ChatGPT and the various definitions of the term instructional materials that were retrieved from different publications; and e) Lastly, the author/researcher reviewed the generated texts and did the validation using his knowledge and expertise as a full-professor at the School of Graduate Studies in his home university.

#### 4. Literature Review

##### *The Term Instructional Materials: Its Diverse Perspectives*

Although specific purposes are viewed differently, resources that support teaching and learning are often referred to as *instructional materials*. While some authors and researchers highlight the roles of instructional materials in content delivery and fostering student engagement, others see them merely as resources to support learning. These contrasting viewpoints draw attention to the intricacy of educational resources, specifically instructional materials, and emphasize the need for further investigation to maximize their design, creation, and application in a variety of educational contexts. By redefining their approaches and resources, educators can better connect them with learning objectives and enhance the quality of education they provide to their respective stakeholders.

A vast collection of resources are utilized as instructional materials to facilitate and improve learning. Through their support and enrichment of the teaching-learning process, they play a crucial role in improving the quality of education. Teachers may present content more effectively with the use of these resources, which include both digital and physical tools, which improve student outcomes (Akanbi, 2018, as cited in Isma’il & Lukman, 2022). Moreover, they assist teachers to meet the needs of students with varying learning styles and engage them more fully, and they can be as tangible as models and charts or as digital as educational software (Adesola et al., 2022, as cited in Isma’il & Lukman, 2022). In the same way, these resources help students grasp abstract concepts by giving them real-world experiences in addition to conveying knowledge (Olokooba, 2021). According to Turaki (2020), the utilization of graphic representations, simulations, and other advanced tools facilitates the integration of theory and practice, leading to acquisition of a more tangible knowledge. In addition, instructional materials function as substitute avenues for communication, augmenting lucidity and involvement inside the classroom (Samuel, 2019, as cited in Mendiola & Estonanto, 2022).

Likewise, instructional materials do not only improve students’ understanding but also add connectedness and significance to the learning process. A more dynamic and tangible learning experience is produced and facilitated by these resources as they encourage student interaction and also incorporate past or prior knowledge (Amos et al., 2022) during the teaching and learning engagements. Thus, instructional materials are crucial for helping students achieve their academic goals because they offer the structure and subject matter needed for directed learning (Dick & Carey, 2009, as cited in Damanik et al., 2020).

##### *Roles and Importance of Instructional Materials*

To completely understand the functions that instructional materials play in the teaching-learning process, it is necessary to revisit these roles prior to defining them. Instructional materials resources, which were once thought of as instruments to help in teaching and learning, have changed as a result of advancements in technology, pedagogy, and learner-centered design, among other factors. By looking at their functions in today's classrooms, we can make sure that definitions take into account the dynamic interactions that exist between educators, students, and instructional materials while also acknowledging how context and learning objectives affect these resources. Redefining what instructional materials are is essential to creating definitions that are more in line with modern educational practices and student demands as digital and multimedia tools transform the educational system and landscape as a whole.

As vital instruments that assist both teaching and learning, instructional materials are crucial to the educational process. These are the resources that educators use to help students acquire new information, abilities, attitudes, and values, which improve the effectiveness and engagement of the learning process. Further, originally intended to be tools for teaching and learning, the purposes of utilizing these resources have evolved over time to account for the dynamic interactions that occur between educators, learners, and learning goals (Albarico et al., 2014). This redefinition is necessary because multimedia and digital resources are becoming a necessary component of contemporary education, and new evaluations are needed to ensure

that the materials are more in line with the needs of the students and the facilitators of learning. In order to accommodate a variety of learning styles and preferences, instructional materials are essential in extending instructional methodologies beyond conventional ways (Samuel, 2009). This is particularly critical for courses like Technology and Livelihood Education (TLE) where learning primarily occurs through practical, real-world application (Albarico et al., 2014). Instructional materials improve understanding, critical thinking, and problem-solving abilities by demystifying abstract ideas and promoting interactive, student-centered learning. Moreover, they promote a more engaging and welcoming learning atmosphere in the classroom, which improves the learning efficiency and increase students' interest towards instruction (Bukoye, 2019).

The range of instructional materials has grown to incorporate digital tools like virtual laboratories, online platforms, and multimedia presentations in addition to textbooks and physical models as a result of technological improvements (FAU Lab School, 2017). Particularly in distance education, where bridging the physical gap between instructors and learners involves careful design and integration of multimedia materials, these advances have altered learning by making it more engaging and accessible (Gujjar & Malik, 2007).

In higher education level, where outcomes-based resources improve teaching quality and student learning, the importance of instructional materials is also becoming more and more apparent (Romarate et al., 2023). However, how these materials are incorporated into classes is just as important to their effective usage as their availability. To optimize the impact of instructional materials and make sure that they support rather than overwhelm learners, teachers and course facilitators must possess a thorough understanding of both content and pedagogical knowledge (Tuimur & Chemwei, 2015). Moreover, the main purpose of instructional materials is to support and enrich teaching and learning and to help students better understand and retain the knowledge and concepts they learned.

#### ***Classification of Instructional Materials***

Instructional materials by and large play vital roles in enhancing both the teaching and learning processes, and can be classified in various categories.

According to Romarate et al. (2023), instructional materials range from conventional resources, like textbooks, to contemporary technologies like laptops, eBooks and multimedia platforms. On the other hand, Turaki (2020) argues that they can be divided into real items, print materials, models, audio and audio-visual resources, community-based resources, and improvised tools.

While Adesola et al. (2022, as cited in Isma'il & Lukman, 2022) focus on instructional materials as practical tools, actual objects, and scientific equipment. On the other hand, Chukwunazo et al. (2022, as cited in Isma'il & Lukman, 2022) highlight the significance of both locally manufactured and imported instructional materials.

Similarly, the visual aids (like graphs) improve students' conceptual knowledge, and the realia are for the provision of experiential learning to the students (Ogaga & Wallace, 2016; and Azikiwe, 2007, as cited in Amos et al., 2022). Moreover, projectors and audio-visual equipment improve the realization of learning outcomes by creating an interactive, immersive, and multimodal learning environments to the students (Kemp & Daylon, 1998; and Adeyinka, 2002, as cited in Amos et al., 2022).

#### ***Terms Related to Instructional Materials***

Instructional materials, while central or important in the teaching-learning process, are just one of the broader sets of educational resources. There are many terms related to instructional materials, like: *educational materials, instructional media, instructional resources, materials, media, resource materials, teaching aids, Teaching Learning Materials (TLM), and teaching materials*. The terms are related, but may not be exactly synonymous with instructional materials.

**Educational Materials.** From the general didactic aspect, the term *educational materials* refers to the didactically adapted materials that the teacher can use during the teaching process; for the students who are acquiring their knowledge with the help of the materials, these materials are learning materials or learning success (see also Apple & Christian-Smith, 1991, as cited in Mazgon and Stefanc, 2012). Furthermore, the term refers to all particularly created resources intended to be used throughout the teaching and learning process, which is when studying particular educational elements and accomplishing specific educational goals specified in the course syllabi (Mazgon & Stefanc, 2012).

**Instructional Media.** "They are physical means of delivering instruction to the students. There is a whole range of them that the teacher can choose from. They can be divided into two broad categories: non-projected and projected media" (Williams, 2000, p. 27). According to Abolade (2009, as cited in Amos et al., 2022), they are known as instructional content, and as "all available human and material resources that appeal to the students' senses of seeing, hearing, smelling, tasting, touching, or feeling and aid in teaching and learning" (p. 3).

**Instructional Resources.** They are those that are used to help students learn more effectively (Eniayewu, 2005, as cited in Amos et al., 2022). Likewise, they are materials that aid in the facilitation of teaching and learning (Onasanya & Omosewo, 2011).

**Material.** “It refers to the resources available to the teacher and learners which serve as stimuli in the teaching-learning situation. A material of learning may either a ‘human person’ or a ‘physical object’ (Palma, 2009, p. 107).

**Materials.** They mean anything which is used to help to teach language learners. They can be in the form of a textbook, a workbook, a cassette, a CD-ROM, a video, a photocopied handout, newspaper, a paragraph written on whiteboard or anything which presents or informs about the language being learned (Tomlinson, 1998, as cited in Harsono, 2007). Likewise, Tomlison (2001, as cited in Harsono, 2007) states that materials mean anything which can be used to facilitate the learning of a language (linguistic, visual, auditory or kinesthetic). These materials can be presented in print, live performance, on cassettes, CD-ROM, DVD or on the internet.

**Media.** “It is used to refer to television, satellite communication, computers, and other advanced modern technologies....” (Eniayewu, 2005, as cited in Amos et al., 2022, p. 3).

**Resource Materials.** “Resource materials allow learners to have practical experiences which help them to develop skills and concepts and to work in a variety of ways” (Tuimur & Chemwei, 2015, p. 225).

**Teaching Aid(s).** Teachers use them to enhance classroom instruction, extract learners’ attention and create a motivation to learn (Joseph, 2015, as cited in Ordu, 2021). As pedagogical tools of teaching, they help in the dissemination of information by the teacher to the children in the classroom (Murphy, 2003, as cited in Joseph, 2015). Further, according to Durdanovic (2015, as cited in Ordu, 2021), they are:

also called audio-visual aids. Contemporary teaching aids that in use provide stimulation to ears and eyes together compared to the traditionally used teaching aids that stimulated only one sense organ. The emerging teaching aids involve other sense organs. (p. 212)

Additionally, Orji (2000, as cited in Effiong & Igiri, 2015) asserts that the teaching aid is “the guidance of learning activities” (p. 28) that “a teacher uses to motivate and arouse student’s desire to learn” (p. 28).

**Teaching Learning Materials (TLM).** They have been widely recognized as one of most important components in language teaching to support the success of language learning (Dewi, 2016). According to Lewis (2016, as cited in Dewi, 2016; k6educators.about.com, n.d., as cited in Dewi, 2016) teaching learning materials (TLM) refers to “a spectrum of educational materials that teachers use in the classroom to support specific learning objectives, as set out in lesson plan” (p. 2). It is generally believed that TLM indeed support students learning and the teaching learning success. Besides helping teachers to construct a better lesson plan. TLM also assist teachers professionally, and use them as resources to describe instructions. Furthermore, in an active based learning, TLM is employed variously so that students can have interactions with each other as much as possible (Dewi, 2016).

**Teaching Materials.** According to Alghazo (2016, as cited in Taylor and Ramirez, 2023), teaching materials include a diversity of resources to support the learning process, for example: textbook, specific software, worksheets, and audiovisuals, among others. They are “resources uses [*sic*] to help deliver instruction” (Djumingin, 2017, p. 53, as cited in Damanik et al., 2020, p. 1652). They are the resources used by teachers in delivering teaching (Damanik et al., 2020). The same opinion is expressed by Sinaga (2014, as cited in Damanik et al., 2020) that teaching materials are materials consisting of various forms that are used by teachers and students to assist teachers in the process of teaching and learning activities in the classroom. Teaching materials are “very important instruments to help the learners take part in the learning and teaching processes and are very important tools to help the learning and teaching process” (Seven and Ali, 2010, as cited in Damanik et al., 2020, p. 1652).

## 5. Results and Discussion

The study’s findings are organized according to the research questions. The data are likewise grouped and presented based on each specific question. This approach ensures that the results directly address the key questions of the study.

### ***What is a Comprehensive Definition of the Term Instructional Materials?***

Table 1 shows the 15 definitions of the term *instructional materials* by 15 authors, whose names were arranged alphabetically, and from seven research journals. Specifically, these journals are: Anatolian Journal of Education; Asian Journal of Education and e-Learning; Aquademia; Budapest International Research and Critics in Linguistics and Education (BirLE) Journal; IOP Conference Series: Earth and Environmental Science; Online Journal by League of Educational Researchers International; and Open Journal of Educational Research.

The data in Table 1 also show that while various authors have provided diverse definitions of *instructional materials*, they generally converge on defining them as resources employed by educators to facilitate instruction and improve the learning process for students.

Specifically, based on the synthesis of the definitions from 15 authors (see Table 1, and using the prompt: *(Based on these definitions from different authors, create a comprehensive or synthesis definition of the term instructional materials)* instructional materials are:

tools and resources used by educators to facilitate learning by making abstract concepts more concrete and enhancing students’ understanding. They serve as communication channels, bridging the gap between theoretical content and practical application in educational contexts. These materials range from tangible objects, like books, models, and multimedia, to interactive tools like audiovisual aids and computer-based platforms, all designed to enrich the learning experience. Their primary purpose is to support the teaching process, stimulate students’ interest, and improve knowledge retention by providing realistic and experiential learning opportunities. Ultimately, instructional materials aim to foster positive student outcomes by enhancing engagement, concretizing ideas, and complementing traditional teaching methods. (ChatGPT, 2024)

The abovementioned *comprehensive definition* of the term is affirmed by the finding of several studies that “the use of instructional materials can improved [*sic*] students’ performance” (Mathew, 2012; see also Omabe, 2006, & Umoren, 2004, as cited in Ajoke, 2017, p. 36). More specifically, Ajoke’s (2017) findings that there is a “statistically significant difference in the performance of students taught with the use of visual instructional materials and those taught without the use of instructional materials” (p. 420). Specifically those who learned with instructional materials performed better than those who were taught without the instructional materials.

Moreover, the comprehensive definition is aligned with Wang et al.’s (2021) more recent definition of instructional materials, which asserted that:

Instructional materials are any materials that are intended to provide learning opportunities for students. Instructional materials include curricula and supplemental materials. They include materials required, recommended, or provided by districts or schools and materials that teachers locate or create themselves. (p. 3)

Table 1

*The various definitions of the term instructional materials published by authors and researchers in selected research journals and/or other scholarly sources*

Source No.	Author & Year	Name of the Journal/Source	Definition of Instructional Materials
1	Abolade (2009, as cited in Amos et al., 2022)	<i>Open Journal of Educational Research</i>	In conjunction with the instructor, instructional material is a channel of communication via which information is passed for use in educational situations. When reading the description of instructional material, it becomes clear that the purpose of the material is to assist students in their learning.
2	Adesola et al. (2022, as cited in Isma’il & Lukman, 2022)	<i>Aquademia</i>	Instructional materials as any animate materials or inanimate objects as well as human and non-human resources that a teacher may use in teaching and learning situations to facilitate desired learning outcomes.
3	Akanbi (2018, p. 15, as cited in Isma’il & Lukman, 2022, p. 2)	<i>Aquademia</i>	Instructional materials are aids “designed to enrich the teaching and learning processes and hence contribute to better learning.”

4	Amadioha (2009, as cited in Turaki, 2020)	<i>Online Journal by League of Educational Researchers International</i>	Instructional materials refer to those alternative channels of communication which a classroom teacher can use to concretize a concept during the teaching and learning process.  Traditionally, classroom teachers have relied heavily on the 'talk-chalk' method during their teaching but recently, instructional materials are used to help provide variations in the ways in which messages are sent across.
5	Amos et al. (2022, pp. 1- 2)	<i>Open Journal of Educational Research</i>	"To be more specific, instructional materials are educational tools that are utilized to illustrate teaching content, making learning more concrete and less abstract. Instructional material improves factual information acquisition and retention by giving a more realistic experience. Not only does instructional material provide the necessary actual experience, but it also assists pupils in integrating previous knowledge."
6	Eniyewu (2005, as cited in Amos et al., 2022)	<i>Open Journal of Educational Research</i>	Now, instructional materials, as the name implies, are visual and audio- visual tools that aid in the concretization of abstract concepts and ideas in the teaching/learning process. They're also materials that the instructor utilizes to round out his lessons.
7	Esiobu (2005, as cited in Abubakar, 2020)	<i>IOP Conference Series: Earth and Environmental Science</i>	Instructional materials...are defined as any device or object employed by teachers to facilitate the teaching process or brighten the classroom.
8	Dick and Carey (2009, p. 230, as cited in Damanik et al., 2020, p. 1652)	<i>Budapest International Research and Critics in Linguistics and Education (BirLE) Journal</i>	'Instructional material contains the content either written, mediated, or facilitated by an instructor that a student as use [sic] to achieve the objective also include information that the learners will use to guide the progress.'
9	Gbamanja (1990, as cited in Amos et al., 2022)	<i>Open Journal of Educational Research</i>	Instructional materials as any device with instructional content or function that is used for teaching purposes, such as books, supplementary reading materials, audio visual and other sensory materials, script for audio and television instruction, and computer manage sets of materials for construction and manipulation.

10	Ikerionwu (2000, as cited in Amos et al., 2022)	<i>Open Journal of Educational Research</i>	Instructional materials are objects or devices that assist the tutor in making learning meaningful to the students.
11	Mustapha et al. (2022, as cited in Isma'il & Lukman, 2022)	<i>Aquademia</i>	Relevant and appropriate instructional materials help to arouse and sustain interest and help to concertize ideas and stimulate the imaginations of the students, thus enhances achievement of students in a subject...Instructional materials as teaching and learning materials that are used by a teacher to assist in providing information for the attainment of required learning experience. Therefore, instructional materials are all the things or materials that may be used by a teacher as part of
			instructional process in order to deliver effective and successful teaching that can facilitate positive students' learning outcomes. Thus, they are all materials intentionally used by a teacher to impact students' learning during instruction.
12	Ogbaji (2017, as cited in Amos et al., 2022)	<i>Open Journal of Educational Research</i>	The gadgets invented or purchased to assist or facilitate tutors in imparting organized knowledge, abilities, and attitudes to students within an instructional context are known as instructional materials.
13	Olokooba (2021, p. 167)	<i>Anatolian Journal of Education</i>	"Instructional materials provide learners with real learning experience."
14	Samuel (2019, as cited in Mendiola & Estonanto, 2022)	<i>Asian Journal of Education and e-Learning</i>	Instructional materials constitute alternative channels of communication, which a teacher can use to convey more vividly to learners. They represent a range of materials which can be used to extend the range of vicarious experience of learners in the process.
15	Turaki (2020, para. 2 & para. 3)	<i>Online Journal by League of Educational Researchers International</i>	"However, it is worthy of note that the instructional materials and resources referred to and treated here are not like pencils, pens and white boards etc. We are referring rather, to the graphical rendition of lessons, the literatures on lessons that accompany the teachers' classes, the pictorial and life imitation of themes and so on.... Instructional materials are materials that the teacher uses in teaching to depict real life situations in the classroom."

*What learning resources qualify as instructional materials, and what do not?*



Using the OpenAI (2024), specifically the ChatGPT (Using the prompt: Based on these definitions from different authors, create two concise paragraphs to answer the question, "What Qualifies as Instructional Materials, and What Does Not?"), the following answers were created:

Instructional materials are tools and resources used by educators to enhance the teaching and learning process. These materials serve as communication channels, allowing teachers to convey information more effectively and concretize abstract concepts for students. They range from animate and inanimate objects, such as real-life specimens, visual aids, and human resources, to technology-based tools like multimedia platforms, computers, and audiovisual materials. The primary function of instructional materials is to assist in delivering content, making learning more concrete, and improving students' understanding and retention of factual information. Ultimately, these materials aim to enrich classroom experiences and facilitate the attainment of learning outcomes. (ChatGPT, 2024)

What qualifies as instructional materials extends beyond traditional objects like books and chalkboards. Instructional materials must actively contribute to the learning process, offering variations in how information is presented to ensure that lessons are engaging and effective. These can include any tool that aids teachers in communicating ideas—such as models, charts, films, and software—as long as they enhance understanding and stimulate student interest. In contrast, items like pens, pencils, and other basic classroom supplies, which do not directly support instructional goals, generally do not qualify as instructional materials. Instead, instructional materials must be purposefully selected to align with educational objectives and provide students with meaningful learning experiences. (ChatGPT, 2024)

The aforementioned OpenAI created texts are aligned with the definitions of the term instructional materials from 15 authors/researchers (see Table 1). According to them, instructional materials encompass a broad range of resources and tools used to facilitate and enhance the teaching-learning process. These materials include both animate (e.g., human resources) and inanimate objects (e.g., books, visual aids, audiovisual materials) designed to make abstract concepts more concrete. Instructional materials also serve as alternative communication channels, offering realistic learning experiences through sensory engagement, and they may include written content, multimedia tools, scripts, and digital resources that support lesson objectives and assist students in knowledge retention and comprehension.

Specifically, they include traditional resources like textbooks, handouts, charts, and models, as well as digital resources such as eBooks, videos, and software applications (Romarate et al., 2023). Other examples include consumables like chemicals for experiments, real objects, visual aids such as slides and posters, and multimedia tools like televisions and projectors (Ajemba et al., 2021, as cited in Isma'il & Lukman, 2022; Adesola et al., 2022, as cited in Isma'il & Lukman, 2022). Modern instructional materials also feature electronic devices like computers and interactive digital media (Mendiola & Estonanto, 2022). These varied resources facilitate diverse learning experiences and support cognitive development across disciplines.

On the other hand, items that do not qualify as instructional materials are those that serve only basic, non-instructional functions, such as pencils, pens, and whiteboards. These are tools for writing or facilitating communication, but they do not directly contribute to making learning more concrete or meaningful. Additionally, materials without educational content or a purpose in supporting teaching or enhancing the learning process, such as non-informative objects or classroom decorations, would not be considered instructional materials. Anything not specifically designed to aid in the communication of concepts or improve learning outcomes would fall outside this category.

More specifically, electronic or computer hardware, furniture, calculators, audio-visual equipment, office equipment, and general teaching supplies are not considered instructional materials. While instructional materials include items such as textbooks, ancillary materials, maps, recordings, software, and laboratory supplies, the hardware used to access or deliver these materials is explicitly excluded from the definition (FAU Lab School's Instructional Materials Policy, Including Textbooks, 2017).

## 6. Limitations of the Study

In this study, the researcher purposively selected and utilized only 15 definitions and/or descriptions of the term instructional materials that were published in seven refereed research journals by the respective author or group of authors. In terms of relevance and recentness, the most recent definition selected and utilized by the researcher in this study was published in 2022, while the least recent was published in 1990, respectively.

Significantly, while acknowledging the importance, relevance, and novelty of technology in this study—the generative Artificial Intelligence (AI) chatbot, specifically the ChatGPT—the researcher also acknowledges its strengths and limitations, including the ethical concerns that are related to the use of AI tools in conducting academic researches. Thus, proper citation and acknowledgments are observed in this study.

## 7. Conclusions

In this paper, the researcher emphasizes the importance of establishing clear definitions for key educational concepts, particularly the term *instructional materials*, which is critical for effective curriculum planning or preparation, implementation, and evaluation. Precise definitions serve as a foundation for enhancing the overall teaching and learning process. The researcher draws the following key conclusions:

First, instructional materials, as defined by various authors as published in selected research journals, are essential resources used by educators to enhance teaching, support learning, and improve student engagement and retention of knowledge. They play a vital role in education by enhancing teaching effectiveness, facilitating hands-on learning, making abstract concepts more concrete and accessible, and promoting student engagement and improved academic performance through diverse and innovative approaches;

Next, instructional materials are part of a broader category of *educational resources*, including terms like: educational materials, instructional media, instructional resources, materials, media, resource materials, teaching aids, Teaching Learning Materials (TLM), and teaching materials; all of which support (to varying extent) effective content delivery, student engagement, and knowledge acquisition;

Then, instructional materials are diverse resources—both animate and inanimate—intentionally selected to facilitate teaching and learning by providing concrete experiences, enhancing understanding, improving knowledge retention, and engaging students' senses; thereby serving as essential tools for achieving educational objectives and outcomes; and

Finally, instructional materials encompass a wide variety of resources designed to facilitate learning and enhance teaching. In contrast, resources that serve basic functions without educational content—such as writing instruments, classroom furniture, or non-informative decorations—do not qualify as instructional materials, as they do not directly contribute to the teaching-learning process.

## 8. Recommendations

In view of the findings and conclusions of this study, the following recommendations are given:

First, teachers should become familiar with the various instructional materials and select those that effectively enhance teaching, support learning, and improve student engagement and knowledge retention. They may also conduct research, individually or in groups, on instructional materials to deepen their understanding and expertise in this area.

Second, instructional materials are essential for facilitating effective teaching and learning. To maximize achievement of learning outcomes, teachers should integrate these materials into lesson delivery, ensuring they are aligned with diverse, innovative, and pedagogically sound teaching methods and approaches. This strategic use of instructional resources will not only support content delivery but also promote deeper students engagement and understanding.

Third, teachers, school administrators, and other education stakeholders should have a clear understanding of key terms, such as *instructional materials*, recognizing that related terms may have distinct meanings. A comprehensive grasp of these concepts will inform their actions and decisions, which directly influence the teaching-learning process and impact learning outcomes. This depth of knowledge is critical in ensuring the educational practices and policies are effectively aligned to support optimal learner performance.

Then, to become effective facilitators of students' learning, teachers should not only utilize innovative teaching methods but also employ a wide range of instructional materials. In particular, they should incorporate resources that contextualize and concretize abstract concepts, thereby enhancing students' understanding and retention of knowledge and theories. This strategic use of diverse materials will support deeper learning and ensure that abstract ideas are made accessible and meaningful to students.

Finally, school administrators, teachers and other education personnel should recognize that not all classroom resources contribute equally to effective teaching and learning. The critical role of relevant and appropriate instructional materials should be prioritized. To enhance teaching effectiveness, educators should focus on acquiring and utilizing instructional materials that directly support learning objectives and outcomes, rather than investing in resources that offer limited or of no instructional value.

By implementing the suggested recommendations, future research can provide valuable contributions to optimizing instructional materials and advancing their effectiveness in improving educational practices, and ultimately—attainment of learning outcomes.

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