DIDACTIC DESIGN USING PDFGEAR

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Abstract. This article aims to present PDFgear and how to use it. One of the applications discussed is converting a PDF file to Word. At the same time, it aims to explore whether it can be used by teachers in didactic design, specifically the applicability of PDFgear in designing a lesson plan. As a result of the requests sent to PDFgear, the software is capable of correctly converting PDF files to other formats, in this case to Word. Also, it is capable of suggesting the outline of a lesson plan, but the intervention of the teacher is necessary to refine it and corroborate it with the national rigors of didactic design. The advantages can be mentioned: its use without costs; the ability to convert .pdf files to other formats; saving time for didactic design. As a disadvantage, human intervention is required in this last design step for use in the teaching process.

Keywords: AI co-pilot, Artificial Intelligence, AIED, didactical design, teacher.

Introduction

Artificial intelligence (AI) is a field of computer science that deals with how machines, using various programs, can perform cognitive processes such as learning, understanding, and interaction.[2] Artificial intelligence in education is a developing interdisciplinary field that applies artificial intelligence technologies in education. This does not imply replacing teachers with a machine or a robot in traditional classrooms, but about advanced tools and technologies that help them

meet learning needs and provide personalized education. Indeed, one can speak of a collaboration between a teacher and artificial intelligence. [11] „Artificial Intelligence is a booming technological domain capable of altering every aspect of our social interactions. In education, AI has begun producing new teaching and learning solutions that are now undergoing testing in different contexts."[18]

Using artificial intelligence (AI) in instructional design can have many benefits for teachers. Speaking of personalizing learning, AI can help tailor learning materials to each student's individual needs, providing a personalized learning pace and content tailored to the student's level of knowledge. AI can be used to automate the assessment process, allowing teachers to focus more on teaching and interacting with students. AI can collect and analyze data about student performance, providing teachers with information that can be used to improve teaching and learning strategies.

An important benefit for teachers is also the creation of teaching materials. Some AI tools, such as PDFgear, can help teachers create personalized teaching materials such as lesson plans, learning units or assessment tests. Teachers can develop or customize intelligent content according to school curricula. [12]

However, it is important to remember that AI is only a tool and its success in education depends on how it is used by teachers and educational institutions. In addition, there are data privacy, ethics, and equity challenges that need to be addressed as AI becomes more prevalent in education. [4]

This article aims to present PDFgear and how to use it. One of the applications discussed is converting a PDF file to Word. At the same time, it aims to explore whether it can be used by teachers in didactic design, specifically the applicability of PDFgear in designing a lesson plan.

Theoretical framework

PDFgear AI co-pilot [7] is a virtual assistant capable of extracting the summary of the document or creating tasks at the request of the user's prompt. By prompt, we mean the user's requirement, which can be a text or voice message. "In

the context of artificial intelligence and programming, a 'prompt' is a request or instruction that indicates the user to provide an input or guides the behavior of an AI system." [8] Unlike ChatPdf, which is an online application, PDFgear is a software dedicated to working with PDF files, offering a wide range of functions, such as managing PDF files, chat, marking, editing or conversion. What differentiates PDFgear is its AI co-pilot feature, which makes documents intelligent and simplifies working with them by communicating with PDF AI co-pilot.

The advantages of this application are: it is free, it has conversion facilities , , , , and has an AI co-pilot

If the virtual assistant is accessed, a new window opens, asking in English if you want to summarize the document, suggest questions, edit, convert, or manage the document in any way. If none of these are desired, the user is prompted to chat with the chatbot.

Research questions and objectives

Research Questions:

1. How effective is PDFgear in converting PDF files to Word format?
2. Can PDFgear be utilized by teachers in didactic design?
3. What is the applicability of PDFgear in designing a lesson plan?
4. What are the advantages and disadvantages of using PDFgear in didactic design?

Research Objectives:

1. To evaluate the effectiveness of PDFgear in converting PDF files to Word format.
2. To explore the potential use of PDFgear by teachers in didactic design.
3. To assess the applicability of PDFgear in the design of a lesson plan.
4. To identify the advantages and disadvantages of using PDFgear in didactic design.

Research methodology

This research is a case study on the usefulness of PDFgear for teachers. For this purpose, the following was done:

Tool Overview: This involves an evaluation of PDFgear, specifically its ability to convert PDF files to Word format. This was done by converting several PDF files of varying complexity and then evaluating the quality of the converted Word files. The steps to be taken to perform the PDF - Word conversion are presented in detail

Case Study: A case study on creating a lesson plan using PDFgear. The process, ease of use, pros and cons are documented in detail.

The data collected from the tool evaluation will then be analyzed.

Research results

Tool Overview. PDFgear and the conversion of PDF files to Word

To work with PDFgear, it is necessary to download PDFgear Chat AI from the following address: https://www.pdfgear.com/chat-pdf/. [15]

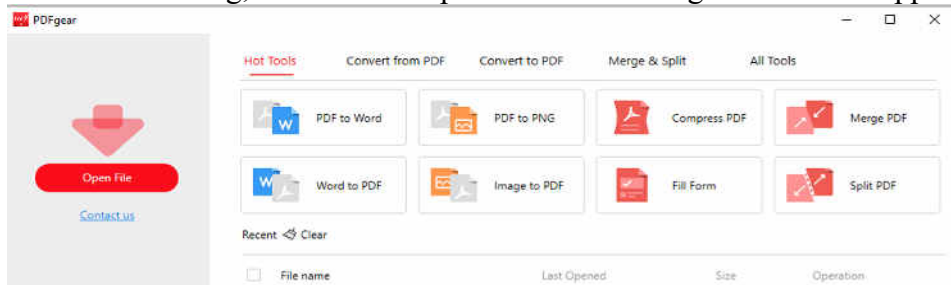After downloading, PDF Gear is opened and following window will appear

Figure 2

The pdf document is opened and various conversions or compression of the file can be requested. Also, if the operator wishes, various information about the file, such as the summary, or various other information can be requested. The chat functionality only works if there is an internet connection.

When a .pdf document needs to be converted to Word, the following steps are taken:

- If the pdf document has been accessed before and is found in the list of recent documents, the file is selected and the PDF to Word button is pressed. The window from *figure* 2. a) appears; when the *Add File* button is pressed, the desired file is selected from the computer in use and loaded into the program. The *Convert* button is pressed and in *figure* 2. b) the loaded file can be seen, which is being converted to Word in *figure* 2. c) the file has been converted and can be opened ▤, can be viewed the location where it was saved (the PDFgear folder) 🗁, or it can be deleted from the computer. 🗑
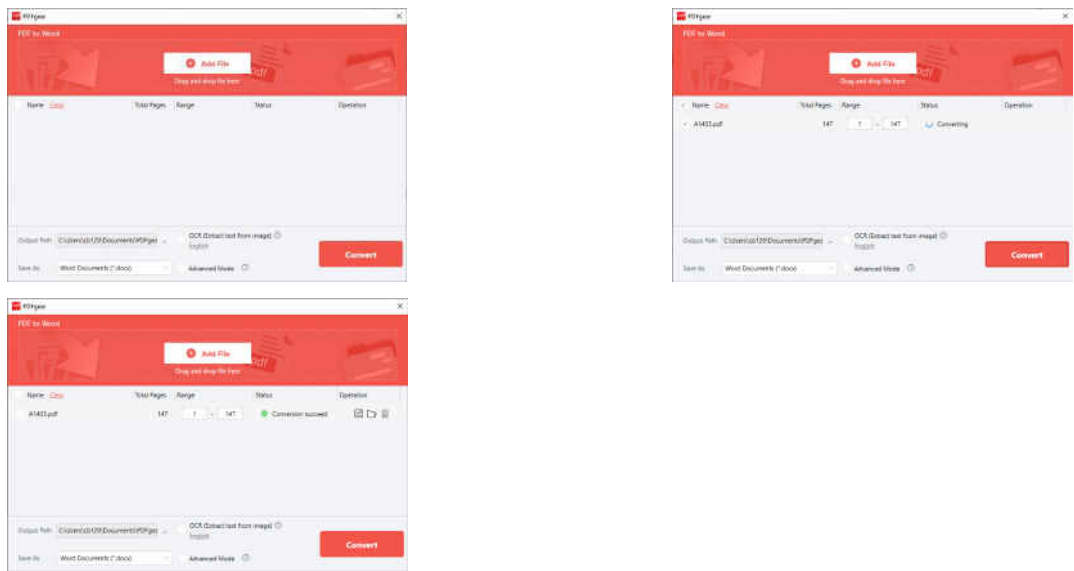

Figure 3. a); b); c)

- If the pdf document has not been accessed before, and therefore is not found in the list of recent documents, the Open File button from figure 1 is pressed. The pdf opens in PDFgear, and in the right window, the *Chat Now* option appears as shown in figure 3. a). The PDFgear Chat greets us with the message from figure 3. b)
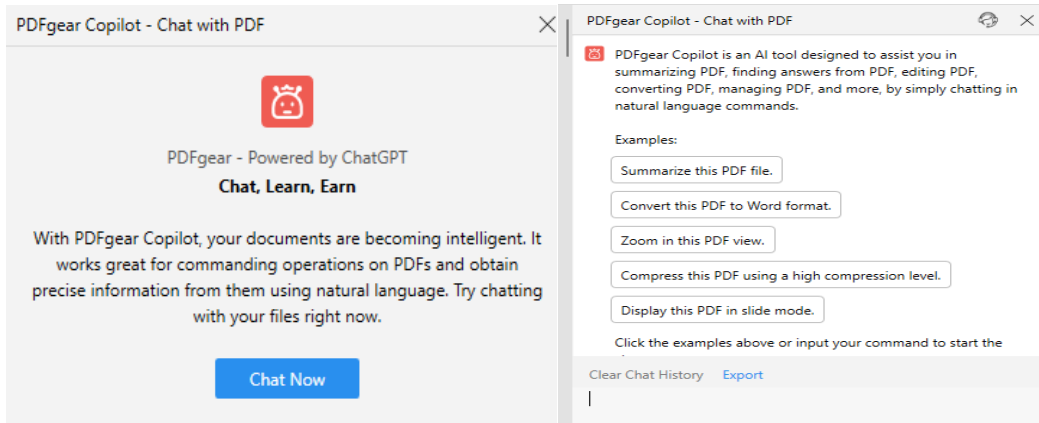
Figure 4 a) ; b)

The option to *Convert this PDF to Word format* is set; the virtual assistant asks for confirmation with "*Would you like to convert the PDF to word?*". *Yes* is pressed, and the window from figure 2. b) opens, after which the process described earlier is continued.

Case Study: The use of PDFgear in didactic design

The desired file is opened, in this case the lesson from the 6th grade physics textbook, Lever (interdisciplinary treatment – levers in the locomotor system) [1].**Error! Reference source not found.**
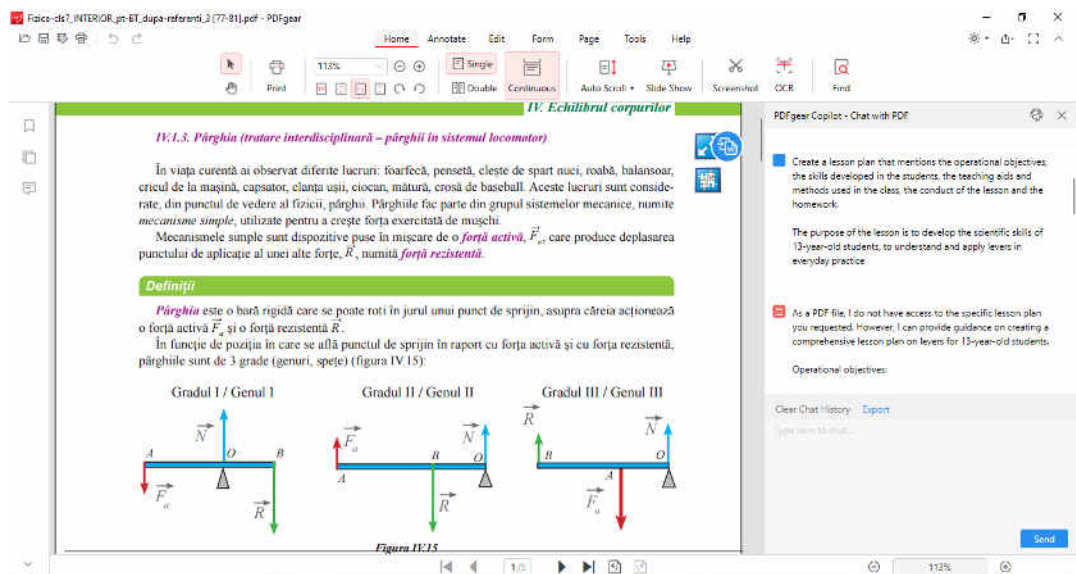

Figure 5

Teacher: Create a lesson plan that mentions the title of lesson, the operational objectives, the skills developed in the students, the teaching aids and methods used in the class, the conduct of the lesson and the homework.

The purpose of the lesson is to develop the scientific skills of 13-year-old students, to understand and apply levers in everyday practice.

PDFgear responds: Sure, here is a sample lesson plan that meets your request:

Title of Lesson: Lever Up! Understanding and Applying Levers in Everyday Practice

Operational Objectives:

- Students will understand the concept and types of levers
- Students will identify and describe the parts of a lever system
- Students will apply the principles of levers in everyday practice
- Students will develop problem-solving and critical thinking skills
- Students will enhance cooperation skills in group activities

Skills Developed in Students: scientific literacy; analytical and critical thinking; problem-solving skills; group cooperation and communication.

Teaching Aids and Methods:

- Presentation slides with visual aids;
- Interactive demonstrations using real-life examples;
- Group discussions and brainstorming sessions;
- Problem-solving activities in groups and individually.

Conduct of the Lesson:

Introduction:

- Introduce the topic of levers and their importance in everyday life;
- Engage students by presenting examples of levers around the classroom.

Body:

- Define the concept of a lever using diagrams and real-life examples;
- Present the three types of levers and their characteristics;
- Explain the parts of a lever system (fulcrum, load, force) and their functions;
- Conduct interactive demonstrations to illustrate the principles of levers;
- Provide problem-solving activities in groups and individually to enhance student learning;

- Encourage group discussions and brainstorming sessions to promote critical thinking.

Conclusion:

- Recap the main points discussed in the lesson;
- Conduct a quiz to assess the understanding of the topic;
- Assign homework to reinforce learning and encourage application of the principles of levers in everyday life.

Homework:

- Ask students to identify and describe the types of levers used in their everyday life;
- Encourage students to share examples of levers they encounter in their daily routine;
- Provide problem-solving questions that require the application of lever principles.

By following this lesson plan, 13-year-old students will be able to develop their scientific skills by understanding and applying levers in everyday practice. The plan reinforces the key concepts through visual aids, interactive demonstrations, and group activities that enhance problem-solving skills and group cooperation. Homework reinforces the concepts learned in class and ignites students' inquisitiveness to identify levers used in their daily life.

Conclusions

Based on the data analysis, conclusions can be drawn regarding the effectiveness and applicability of PDFgear in instructional design. The objectives of this study - to evaluate the efficiency of PDFgear in converting PDF files to Word format; teachers' exploration of the usefulness and applicability of PDFgear in instructional design; identifying the advantages and disadvantages of using PDFgear in didactic design; proposing improvements or alternatives based on the findings - have been achieved. The answers to the research questions are the following.

PDFgear is highly effective in converting PDF files to Word format. As strengths can be mentioned: it offers an easy-to-use, fast and reliable solution for converting PDFs to Word, but also to Excel, PowerPoint, or image files; PDFgear is a free PDF editor with AI assistance that can simplify document editing

workflows. The conclusion is that PDFgear seems to be a reliable and efficient tool for converting PDF files to Word format.

PDFgear can be used by teachers in instructional design. The PDF file conversion feature is useful for teachers to create and modify teaching materials. The AI co-pilot, which integrates the ChatGPT AI model, allowing users to seamlessly interact with PDFs.

This feature can help teachers extract information from large PDF files, create lesson plans or learning units. However, it is noted that the suggested lesson plans need to be completed/corrected by the teacher. They do not contain the national rigors in didactic design. PDFgear's effectiveness in instructional design may also depend on the specific needs and requirements of teachers and the learning environment.

The advantages can be mentioned: its use without costs; the ability to convert .pdf files to other formats; saving time for didactic design. Another advantage that can be mentioned is that at the end of the response to the request, the pages from where the information was extracted are mentioned. As a disadvantage, human intervention is required in this last design step for use in the teaching process. The competencies are not described correctly, they are mentioned only generically and must be modified according to the rigors of the national didactic design. Also, the duration of the class is not specified. The teaching aids and methods used are not formulated correctly.

It is observed that it can create both the lesson plan and other design products, such as the design of the learning unit or evaluation tests. However, these are not complete and it is necessary for the teacher to intervene to reach the desired form. The errors found are greater than those given by ChatGPT. On the other hand, it can summarize some books, extract the main characters, but it can give very large errors (beat plains gracefully). It is not recommended to be used in this sense in the classroom, by students.

However, it can be concluded that it is useful in advising teachers with AI co-pilot PDFgear for didactic design for the design of the lesson plan / learning unit.

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