It's the end of the world as we know it...

AI.AGDA.WTF

THE ADVERTISING & GRAPHIC DESIGN ASSOCIATION 2024 RETREAT

WRIGHTSVILLE BEACH, NC | MAY 19-22, 2024

agdanc.org

**AG
DA** advertising &
graphic design
association|nc

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DESIGNING FOR THE FUTURE WITH AI: AGENDA (TENTATIVE)

Sunday, May 19 *(**all meetings and meals are in the Nighthawk Room**)*

- 12-1 PM: Group lunch (optional)
- 12-4 PM: Coffee, tea, water, soft drinks available in Nighthawk Room
- 2:30-4 PM: Informal meeting; discussion of agenda
- 4 PM: Check-in
- 6-7:30 PM: Dinner
- 7:30 PM - until: open for individual or group activities

Monday, May 20

- 7 – 8:30 AM: breakfast
- 9 – 11:30 AM: Session 1
- 12 – 1 PM: Lunch
- 1:30 – 4 PM: Session 2 (snack break at 2:30)
- 4 – 5:30 PM: group activity (optional)
- 6:30 – 8 PM: Dinner
- 8 PM – until: open for individual or group activities

Tuesday, May 21

- 7 – 8:30 AM: breakfast
- 9 – 11:30 AM: Session 3
- 12 – 1 PM: Lunch
- 1:30 – 4 PM: Session 4 (snack break at 2:30)
- 4 – 5:30 PM: group activity (optional)
- 6:30 – 8 PM: Dinner
- 8 PM – until: open for individual or group activities

Wednesday, May 22

- 7 – 8:30 AM: breakfast
- 9 AM – 11:30 AM: Session 5
- 11 AM: Checkout (box lunch provided)

NCCC Programs + Contacts

COLLEGE	Email Director
Alamance CC	ejperel909@alamancecc.edu
Blue Ridge CC	b_kish@blueridge.edu
Central Piedmont CC	brittany.holleran@cpcc.edu
Cape Fear CC	rchardin780@cfcc.edu
Catawba Valley CC	mcarroll418@cvcc.edu
Davidson Davie CC	paul_campbell@davidsondavie.edu
Fayetteville Tech CC	fisherjl@faytechcc.edu
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Sandhills CC	babbj@sandhills.edu
South Piedmont CC	jevanoff@spcc.edu
Southwestern CC	bkeeling@southwesterncc.edu
Stanly CC	jgooch9259@stanly.edu
Surry CC	smithj@surry.edu
Wake Tech CC	ajconsol@waketech.edu
Wilkes CC	abarnder632@wilkescc.edu

NC COMMUNITY COLLEGE DESIGN & MEDIA PROGRAMS:

Graphic Design

About

The Graphic Design curriculum is designed to provide students with the knowledge and skills necessary for employment in the graphic design profession which emphasizes design, advertising, marketing, and illustration for printed and digital media.

Students will be trained in the creative process and application of design principles for advertisements, branding, corporate identity, layouts, typography, visual assets, custom graphics, self-promotional material, and preparation of files for printed and digital distribution.

Graduates should qualify for employment opportunities with design, branding, advertising agencies, signage and printing companies, organizations with in-house marketing operations, freelance work, and entrepreneurial opportunities.

Potential Careers

The following occupational information is provided by www.nccareers.org and is subject to change. The occupations list is not an exhaustive list and may include careers that require higher levels of education than those provided at NCCCS colleges.

Advertising and Promotions Managers
Advertising Sales Agents
Artists and Related Workers, Other
Commercial and Industrial Designers
Fine Artists, Including Painters, Sculptors and Illustrators
Graphic Designers
Photographers
Set and Exhibit Designers
Special Effects Artists and Animators

COLLEGES THAT OFFER THIS PROGRAM

Alamance Community College >	Cape Fear Community College >	Catawba Valley Community College >
Central Piedmont Community College >	Fayetteville Technical Community College >	Guilford Technical Community College >
Isothermal Community College >	James Sprunt Community College >	Johnston Community College >
Lenoir Community College >	McDowell Technical Community College >	Mitchell Community College >
Nash Community College >	Pitt Community College >	Randolph Community College >
Rowan Cabarrus Community College >	Southwestern Community College >	Stanly Community College >
Surry Community College >	Wake Technical Community College >	Wilkes Community College >

Media & Design

About

Media & Design: Includes Commercial Design, AV & Sound Engineering Technician, Film and Video Production, Digital Photography, Heritage Arts Production, and Digital Printing Operator. This area is for those interested in media production and design.

Disclaimer: The colleges listed provided related courses in the 2022-2023 academic year (Summer 2022, Fall 2022, and Spring 2023). Please be aware that course offerings may vary each semester, so we recommend verifying specific details directly with each respective institution.

Potential Careers

The following occupational information is provided by www.nccareers.org and is subject to change. The occupations list is not an exhaustive list and may include careers that require higher levels of education than those provided at NCCCS colleges.

Audio and Video Technicians
Camera and Photographic Equipment Repairers
Photographers
Photographic Process Workers and Processing Machine Operators
Sound Engineering Technicians

COLLEGES THAT OFFER THIS PROGRAM

Alamance Community College >	Beaufort County Community College >	Blue Ridge Community College >
Brunswick Community College >	Cape Fear Community College >	Carteret Community College >
Central Carolina Community College >	Central Piedmont Community College >	Cleveland Community College >
Coastal Carolina Community College >	College Of The Albemarle >	Davidson Davie Community College >
Durham Technical Community College >	Edgecombe Community College >	Fayetteville Technical Community College >
Halifax Community College >	Haywood Community College >	Johnston Community College >
Lenoir Community College >	Martin Community College >	Mayland Community College >
Montgomery Community College >	Nash Community College >	Piedmont Community College >
Randolph Community College >	Rockingham Community College >	Sampson Community College >
Sandhills Community College >	Southeastern Community College >	Southwestern Community College >
Stanly Community College >	Tri County Community College >	Vance Granville Community College >
Wake Technical Community College >	Wayne Community College >	Western Piedmont Community College >
Wilkes Community College >	Wilson Community College >	

Digital Media Technology

About

The Digital Media program prepares students for entry-level jobs in the digital design and multimedia industry. Students learn to synthesize multimedia, hypertext, computer programming, information architecture, and client/server technologies using both Internet and non-network-based media. Students develop skills in communication, critical thinking, and problem solving as well as interface design, multimedia formats, application programming, data architecture, and client/server technologies. The program develops technical skills through practical applications that employ current and emerging standards and technologies. Graduates should qualify for employment as web designers, graphic artists/designers, multimedia specialists, web developers, web content specialists, media specialists, information specialists, digital media specialists, animation specialists, interface designers, and many new jobs yet to be defined in this expanding field.

Potential Careers

The following occupational information is provided by www.nccareers.org and is subject to change. The occupations list is not an exhaustive list and may include careers that require higher levels of education than those provided at NCCCS colleges.

Computer Network Architects
Computer Programmers
Computer Systems Analysts
Computer User Support Specialists
Database Administrators
Graphic Designers
Software Developers
Special Effects Artists and Animators
Web and Digital Interface Designers
Web Developers

COLLEGES THAT OFFER THIS PROGRAM

Asheville Buncombe Technical Community College ›	Fayetteville Technical Community College ›	Johnston Community College ›
Mitchell Community College ›	Sandhills Community College ›	South Piedmont Community College ›
Surry Community College ›		

Graphic Arts and Imaging Technology

About

The Graphic Arts and Imaging Technology curriculum is designed to provide students with knowledge and skills necessary for employment in the printing, publishing, packaging, and related industries. Students will receive hands-on training in computer publishing, imaging technology, offset lithography, screen printing, and emerging printing technologies. Training may also include flexography, graphic design, and multimedia. Graduates should qualify for career opportunities within the printing and publishing industries.

Potential Careers

The following occupational information is provided by www.nccareers.org and is subject to change. The occupations list is not an exhaustive list and may include careers that require higher levels of education than those provided at NCCCS colleges.

Art Directors
Artists and Related Workers, Other
Desktop Publishers
Graphic Designers
Special Effects Artists and Animators
Web and Digital Interface Designers
Web Developers

COLLEGES THAT OFFER THIS PROGRAM

Central Piedmont Community College ›

Forsyth Technical Community College ›

Lenoir Community College ›

Design, Gaming & Application

About

Design, Gaming & Application Development: Includes Simulation and Game Development, Computer Graphics Concepts, Web Design & Development, and Mobile Application Dev I. This area is for those interested in graphic design, web development, and mobile app creation.

Disclaimer: The colleges listed provided related courses in the 2022-2023 academic year (Summer 2022, Fall 2022, and Spring 2023). Please be aware that course offerings may vary each semester, so we recommend verifying specific details directly with each respective institution.

Alamance Community College ›	Asheville Buncombe Tech Community College ›	Beaufort County Community College ›
Blue Ridge Community College ›	Cape Fear Community College ›	Central Carolina Community College ›
Central Piedmont Community College ›	Coastal Carolina Community College ›	Davidson Davie Community College ›
Durham Technical Community College ›	Guilford Technical Community College ›	Halifax Community College ›
Johnston Community College ›	Nash Community College ›	Piedmont Community College ›
Pitt Community College ›	Randolph Community College ›	Sandhills Community College ›
Stanly Community College ›	Surry Community College ›	Vance Granville Community College ›
Wake Technical Community College ›	Wayne Community College ›	Western Piedmont Community College ›
Wilkes Community College ›		

Digital Effects and Animation Technology

About

The Digital Effects and Animation Technology curriculum is designed to provide students with the training necessary to become competent in creating, manipulating, and animating digital images. These skills have application in the production of a variety of moving image forms. Students will take courses covering computer hardware/software applications, computer animation, creation and manipulation of digital images and nonlinear editing. They will become proficient at using media industry standard hardware/software to generate and manipulate images, and create digital special effects. Upon completion of this program, students will be able to generate moving images and manipulate captured images for a variety of media production applications. Graduates should qualify for employment in the creation and/or editing of a variety of media forms.

Potential Careers

The following occupational information is provided by www.nccareers.org and is subject to change. The occupations list is not an exhaustive list and may include careers that require higher levels of education than those provided at NCCCS colleges.

Art Directors
Computer Occupations, Other
Graphic Designers
Special Effects Artists and Animators

COLLEGES THAT OFFER THIS PROGRAM

Forsyth Technical Community College ›

Piedmont Community College ›

Western Piedmont Community College ›

Web Developers

Information Technology

North Carolina

Type in Occupation Name or Job Title

Annual Salary (Wages)

Lower End Wage (10th Percentile)
$39,260($18.88/hr)

Middle Wage (50th Percentile)
$71,740($34.49/hr)

Higher End Wage (90th Percentile)
$128,510($61.79/hr)

$40k $50k $60k $70k $80k $90k $100k $110k $12

Ratings

Wage (5/5)

Job Openings (4/5)

Job Growth Rate (5/5)

Experience Level (3/5)

Translate

Back End Software Engineer

Back End Engineer

More

Occupation Code

151254 - Web
Developers

O*net

Pathway

Web and Digital Communications

NCDPI Career Pathways

Identify the High School Classes that can help start preparing you for a chosen career.

Find classes

Annual Median Wage
$ 71,740

Annual NC Wage Range

$39,260 $128,510

Growth Rate

Very Fast Growing

What do they typically do

Web Developers create and maintain websites. They are also responsible for the site's technical aspects, such as its performance and capacity, which are measures of a website's speed and how much traffic the site can handle. In addition, web developers may create content for the site.

Meet with clients or management to discuss the needs, design, and functionality of a website

Create and test applications, interfaces, and navigation menus for a website

Write code for the website, using programming languages such as HTML or XML

Work with other team members to determine what information the site will contain

Work with graphics and other designers to determine the website's layout

Translate

Create prototypes and mockups of websites or applications
Design and develop graphics

Number of Jobs

Average Annual
Job Growth **+3.5%**
Job Openings **348**

2,539

2018

3,448

2028

Job Listings

Select a region/location in North Carolina to begin your search.

View available jobs

View available jobs on Indeed

Education & Training

Education
Most occupations require training in vocational schools, related on-the-job experience, or an associate's degree.

Associated Programs or Majors

Software Engineering

Computer Software & Media Applications, Other

Computer Science
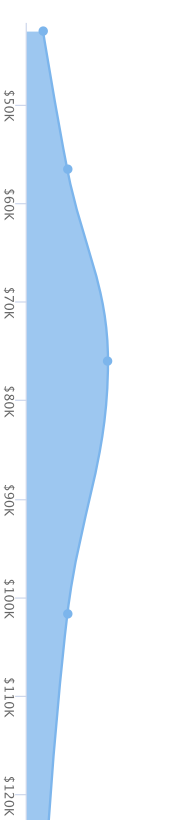
Translate

Type in Occupation Name or Job Title

Web and Digital Interface Designers

North Carolina

Information Technology

Annual Salary (Wages)

Lower End Wage (10th Percentile)
$42,490($20.43/hr)

Middle Wage (50th Percentile)
$75,920($36.50/hr)

Higher End Wage (90th Percentile)
$130,690($62.83/hr)

$50K
$60K
$70K
$80K
$90K
$100K
$110K
$120K

Ratings

Wage (4/5)

Job Openings (4/5)

Job Growth Rate (5/5)

Experience Level (4/5)

Translate

Concept Artist

Content Creator

More

Monitor website traffic

Create prototypes and mockups of websites or applications

Design and develop graphics

Occupation Code

151255 - Web and Digital Interface Designers

O*NET

Pathway

Web and Digital Communications

NCDPI Career Pathways

Identify the High School Classes that can help start preparing you for a chosen career.

Find classes

$42,490

Annual Median Wage

$ 75,920

Annual NC Wage Range

$130,690

Growth Rate

Very Fast Growing

Number of Jobs

3,998

2018

4,871

2028

Average Annual

Job Growth **+2.2%**

Job Openings **507**

Job Listings

Select a region/location in North Carolina to begin your search.

View available jobs

View available jobs on Indeed

Education & Training

Education

Most require a four-year bachelor's degree, but some do not.

Associated Programs or Majors

Graphic Arts & Imaging Technology

Art & Design

New Media

What do they typically do

Web and Digital Interface Designers develop, create, and test website or interface layout, functions, and navigation for usability. They are responsible for the look and functionality of the website or interface.

Meet with clients or management to discuss the needs, design, and functionality of a website's interface

Create and test applications, interfaces, and navigation menus for a website

Write code for the website, using programming languages such as HTML or XML

Work with other team members to determine what information the site will contain

Type in Occupation Name or Job Title

Graphic Designers

North Carolina

Arts, Audio/Video Technology and Communications

Annual Salary (Wages)

Lower End Wage (10th Percentile)
$31,750($15.26/hr)

Middle Wage (50th Percentile)
$51,620($24.82/hr)

Higher End Wage (90th Percentile)
$86,610($41.64/hr)

$35K $40K $45K $50K $55K $60K $65K $70K $75K $80K
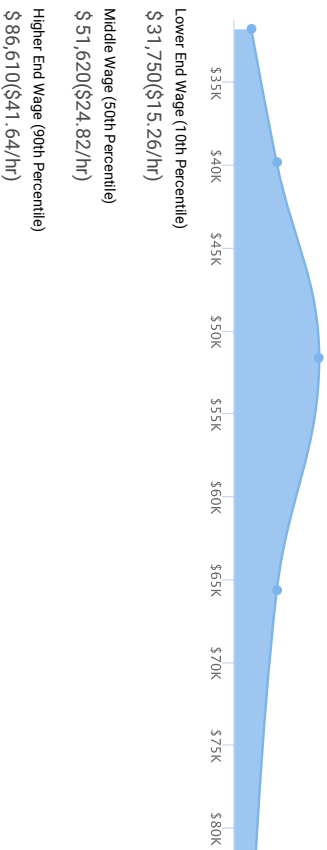
Ratings

Wage (3/5)

Job Openings (5/5)

Job Growth Rate (3/5)

Experience Level (4/5)

Translate

Graphic Artist
Visual Designer
Graphic Designer
Production Artist
Production Designer
Creative Designer
Marketing Graphic Designer
Visual Graphic Designer
Artist
Brand Designer
Designer
Graphic Design Coordinator
Online Producer
Publications Designer
Technical Illustrator
Ad Layout Worker (Advertising Layout Worker)
Catalogue Illustrator
Forms Designer
Layout Artist
Ad Designer (Advertising Designer)
Commercial Artist
Concept Artist
Digital Artist
Graphic Art Designer
Graphics Coordinator
Graphics Specialist
Interface Designer
Label Maker
Multimedia Designer
Multimedia Developer
Multimedia Specialist
Presentation Specialist
Studio Designer

Translate

Occupation Code

271024 - Graphic Designers

Pathway

Visual Arts

NCDPI Career Pathways

Identify the High School Classes that can help start preparing you for a chosen career.

Find classes

Annual Median Wage

$ 51,620

Annual NC Wage Range

$31,750 $86,610

Growth Rate

Moderately Growing

What do they typically do

Graphic Designers create visual concepts, using computer software or by hand, to communicate ideas that inspire, inform, and captivate consumers. They develop the overall layout and production design for applications such as advertisements, brochures, magazines, and reports.

Meet with clients or the art director to determine the scope of a project

Use digital illustration, photo editing software, and layout software to create designs

Create visual elements such as logos, original images, and illustrations to help deliver a message

Design layouts, including selection of colors, images, and typefaces

Present design concepts to clients or art directors

Incorporate changes recommended by clients or art directors into final designs

Review designs for errors before printing or publishing them

Number of Jobs

Average Annual

Job Growth **+0.9%**

Job Openings **946**

2018   2028

Job Listings

Select a region/location in North Carolina to begin your search.

View available jobs

View available jobs on Indeed

Education & Training

Education

Most require a four-year bachelor's degree, but some do not.

Associated Programs or Majors

Fine/Studio Arts

Art

Simulation & Game Development

License

NA

More

Private Training Programs

20480 Programming in HTML5 with JavaScript and CSS3

A by no means complete list of popular generative AI platforms and tools

1. ChatGPT by OpenAI
- Website : https://chat.openai.com/
- Cost : Free tier available; ChatGPT Plus at $20/month for priority access and faster response times.
- Description : ChatGPT is a leading AI chatbot that generates human-like text, widely used for various natural language processing tasks.
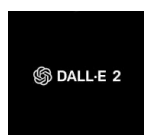
2. DALL-E 2 by OpenAI
- Website : https://www.openai.com/dall-e-2
- Cost : 115 credits for $15.
- Description : An advanced AI model for generating photorealistic images from text descriptions, used extensively in creative industries.

3. Adobe Firefly
- Website : https://www.anthropic.com/
- Cost: Available with Adobe Creative Cloud subscription; pricing varies.
- Description : Adobe's Firefly is a generative AI tool integrated into Adobe's Creative Cloud suite, designed for creating images, text effects, and other visual content. It leverages Adobe's vast library of creative assets to produce high-quality and customizable outputs.

4. MidJourney
- Website : https://www.midjourney.com/
- Cost : Subscription-based, with pricing starting at $10/month for basic features.
- Description : MidJourney is renowned for its ability to generate highly detailed and artistic images from textual descriptions. It is widely used by artists, designers, and creative professionals for its superior visual outputs and creative versatility.

5. GitHub Copilot
- Website : https://github.com/features/copilot
- Cost : $10/month or $100/year.
- Description : An AI-powered code completion tool that assists developers by suggesting lines of code and entire functions.
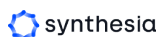
6. Synthesia
- Website : https://www.synthesia.io/
- Cost : $30/month billed annually; Enterprise pricing available.
- Description : An AI video creation platform that allows users to generate professional-quality videos with lifelike avatars.

7. Stable Diffusion by Stability AI
- Website : https://stability.ai/
- Cost : Varies based on usage.
- Description : A powerful text-to-image model used for generating high-quality images, widely utilized in art and design.

8. Civitai
- Website : https://www.civitai.com/
- Cost : Free.
- Description : A repository and community platform for AI art models, primarily used with Stable Diffusion for creating and sharing custom models.
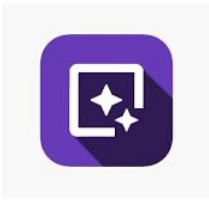
9. DeepArt.io
  - Website : https://deepart.io/
  - Cost : Free with paid options for higher resolution and commercial use.
  - Description : DeepArt.io uses neural networks to turn photos into artwork, mimicking the styles of famous artists.
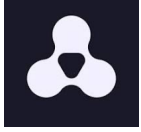
10. Artbreeder
  - Website : https://www.artbreeder.com/
  - Cost : Free with subscription options for advanced features.
  - Description : Artbreeder is an AI-based platform that allows users to create and collaborate on images using generative adversarial networks (GANs). It's particularly known for creating surreal and fantasy-style images.

11. Runway ML
  - Website : https://runwayml.com/
  - Cost : Free tier available; paid plans start at $15/month.
  - Description : Runway ML provides a suite of AI tools for creators to generate images, videos, and 3D models. It's used extensively in creative media production.

12. Let's Enhance
  - Website : https://letsenhance.io/
  - Cost : Free for basic use; subscription plans start at $9/month.
  - Description : An AI-powered tool that enhances and upscales images without losing quality, often used for improving photo resolution and quality.

13. Prisma Labs
  - Website : https://prisma-ai.com/
  - Cost : Free with in-app purchases for premium features.
  - Description : Prisma transforms photos into artwork using the styles of famous artists, using AI and neural networks.
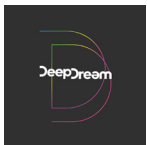
14. DeepDream Generator
  - Website : https://deepdreamgenerator.com/
  - Cost : Free with paid plans for higher resolution images.
  - Description : This tool uses Google's DeepDream algorithm to generate surreal and dream-like images from existing photos.

Additional Generative AI platforms that are text/content based

1. Google Bard
  - Website : https://bard.google.com/
  - Cost : Free.
  - Description : An AI chatbot by Google that generates text responses based on user inputs, similar to ChatGPT.

2. Gemini by Google
  - Website : https://www.google.com/
  - Cost : Free for limited features; $19.99/month for Google One AI Premium plan.
  - Description : An AI tool integrated with Google services, providing enriched search results and real-time data responses.

3. Cohere Generate
  - Website : https://cohere.ai/
  - Cost : Contact for pricing.
  - Description : A text generation solution focused on business applications, including copywriting and data extraction.

4. Claude by Anthropic
  - Website : https://www.adobe.com/
  - Cost : Claude Instant at $0.80 per million prompt tokens; Claude 2.0 at $8 per million prompt tokens.
  - Description : A safe and ethical AI assistant designed for content generation and conversational tasks, offering a customizable and secure experience.

JOB + DATA RESEARCH LINKS:

2024 Economic Report of the President
https://www.whitehouse.gov/wp-content/uploads/2024/03/ERP-2024.pdf

Future of Jobs Report
https://www.weforum.org/publications/the-future-of-jobs-report-2023/

Starbucks Eliminates Global CMO role
https://www.emarketer.com/content/starbucks-saying-goodbye-global-cmo-role-part-of-larger-trend

State of UX Hiring
https://www.weforum.org/publications/the-future-of-jobs-report-2023/

AI in the Classroom

*Can the new technology promote critical thinking
without sacrificing the human touch?*

BY OLIVIA B. WAXMAN

Peter Paccone, a social studies teacher in San Marino, Calif., has a new teacher's aid helping him in the classroom this year. He plans to defer to his helper to explain some simpler topics to his class of high schoolers, like the technical aspects of how a cotton gin worked, in order to free up time for him to discuss more analytical concepts, like the effects of the first industrial revolution.

His new assistant? ChatGPT.

"What I feel that I don't have to do any longer is cover all the content," Paccone told a group of more than 40 educators in a May 2023 Zoom workshop, which he organized. If artificial intelligence is on the cusp of reshaping entire aspects of our society—from health care to warfare—the first realm that leaps to many minds is education: Asked a question online, the ChatGPT chatbot will produce an answer that reads like an essay. Indeed, both students and teachers are grappling with AI's implications for learning, homework, and integrity. Paccone is only one of many high school teachers who has been experimenting with ChatGPT in the classroom. But the tool is inspiring as much trepidation among educators as it is excitement.

In early 2023, some of the nation's largest school districts, from New York City to Los Angeles, banned access to ChatGPT in the classroom, citing "concerns about negative impacts on student learning, and concerns regarding the safety and accuracy of content" while they worked to formulate policies around it. Meanwhile, teachers desperate to figure out how to harness the tech for good congregated in Facebook groups like "chatGPT for teachers" (about 374,000 members) and "The AI Classroom" (more than 29,000 members).
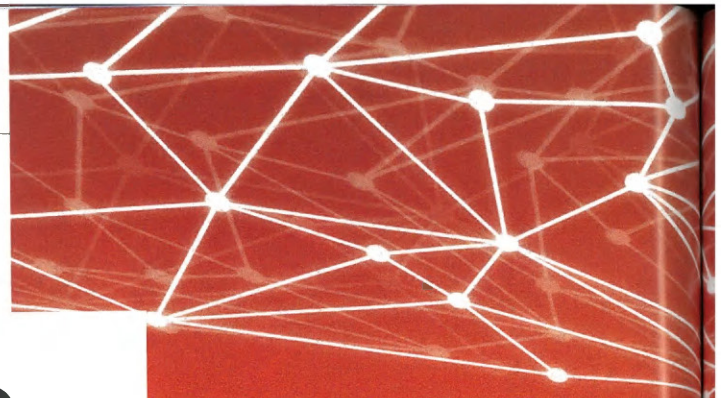
"The majority of the teachers are panicked because they see [ChatGPT] as a cheating tool, a tool for kids to plagiarize," says Rachael Rankin, a high school principal in Newton Falls, outside of Youngstown, Ohio.

But Paccone and a growing group of educators believe it's too late—and a bad idea—to keep AI out of their classrooms. Randi Weingarten, President of the American Federation of Teachers, a major teachers union, believes the panic about AI is not unlike the ones caused by the internet and graphing calculators when they were first introduced, arguing ChatGPT "is to English and to writing like the

ChatGPT has added a layer of excitement to the classroom for now. Is the tech transformative, or just the flavor of the moment? Teachers are on the fence.

calculator is to math." In this view, there are two options facing teachers: show their students how to use ChatGPT in a responsible way, or expect the students to abuse it.

MATH RAPS AND SHAKESPEARE TRANSLATION

As teachers wrestle with whether to use AI in their classrooms, they're also learning about the pernicious ways that abuse can take place.

At another Zoom teacher training workshop that TIME observed in July 2023, hosted by Garnet Valley School District in Garnet Valley, Penn., education consultant A.J. Juliani ran through various AI apps that students are using to cut corners in class. Photomath lets students upload a picture of a math problem and get detailed instructions on how to solve it. Tome can turn notes into a narrative, perfect for essay writing and preparing for presentations. And Readwise can highlight key parts of PDFs so that students can get through readings faster.

"Many of them are just using it to do the work because they're bored," Juliani said. "They're not engaged. They don't care. And we have to own up to that."

Many of the more than a dozen teachers TIME interviewed for this story argue that the way to get kids to care is to proactively use ChatGPT in the classroom. A July 2023 Walton Family Foundation survey found 73% of teacher respondents had heard of ChatGPT, and 33% used it to "help with planning lessons" and 30% to come up with "creative ideas for classes."

Some of those creative ideas are already in effect at Peninsula High School in Gig Harbor, about an hour from Seattle. In Erin Rossing's precalculus class, a student got ChatGPT to generate a rap about vectors and trigonometry in the style of Kanye West, while geometry students used the program to write mathematical proofs in the style of raps, which they performed in a classroom competition. In Kara Beloate's English-Language Arts class, she allowed students reading Shakespeare's *Othello* to use ChatGPT to translate lines into modern English to help them understand the text, so that they could spend class time discussing the plot and themes.

Teachers are also using ChatGPT to generate materials for students at different reading levels. Aileen Wallace, who teaches a class on current events in Falkirk, Scotland, said the tool could instantly produce simplified versions of readings on the causes of terrorism for 14-year-olds who either read at lower reading levels than the rest of the class or have been learning English as a second language.

To be sure, ChatGPT doesn't always get things right—but teachers are finding that provides its own way to engage students. Some are having students fact-check essays generated by the program in response to their prompts, hoping to simultaneously test students' knowledge of the topic and show them the problems with relying on AI to do nuanced work.

In Panama, International Baccalaureate teacher Anna May Drake had juniors and seniors critique a ChatGPT-generated essay comparing George Orwell's *1984* and Margaret Atwood's *The Handmaid's Tale*, while in the Detroit area, Sarah Millard, a ninth-grade honors English teacher, had students critique a ChatGPT-generated essay on Shakespeare's *Romeo and Juliet*. "My students have never been so engaged in writing," Millard says. "They wanted to beat the computer" and were "tearing apart" the AI-generated essay.

Teachers are even finding that ChatGPT is a big time-saver for their own homework. Larry Ferlazzo, who teaches English, Social Studies, and International Baccalaureate classes in Sacramento, calls it a "miracle" and has had ChatGPT help write college recommendation letters for some of his students. He says it did it "10 times better" than he would have alone.

Debate Partner & French Friend

Generative AI has been making inroads across the grade levels and subject matters. Among some innovative uses, look to:

LANGUAGE LITERACY

■ **Storytelling** Educator and author of *The AI Infused Classroom* Holly Clark developed an exercise for students of her second grade class to pick elements for a story, from conflicts to main characters, and then feed them to ChatGPT, *EdWeek* reports. "You are a children's book author," Clark instructed them to prompt the AI. "...write a very short story for an audience of second graders, using these elements."

■ **French, Anyone?** Sean Michael Morris, vice president of academics at Course Hero, says ChatGPT is great for learning a foreign language at any grade level. "I can take a sentence, such as 'How are you today' in French," he tells TIME, and it "responds and I have to read that in French."

■ **Writing** Peter Stone, a computer scientist at the University of Texas at Austin, uses the chatbot to help non-native English speakers improve their written expression. He asks his students to submit both their original work and a polished version produced as output from generative AI. "They are required to both do their own original thinking and improve their clarity of expression," he tells TIME.

CRITICAL THINKING

■ **Skeptical Mindset** Eamon Marchant, science department chair at Whitney High School in Cerritos, Calif., is alerting students to bias and other fundamental flaws, like hallucinations, generated by the tech. The problems "do not scale away," he tells

'THERE'S A TIDAL WAVE COMING'

While many educators agree that a ban on ChatGPT in the classroom is not the answer, they differ on how much it will change schools. Some think it will be a revolution. "There's a tidal wave coming for education," says Dan Fitzpatrick, an author and keynote speaker on AI in education and administrator of "The AI Classroom" Facebook group. "Our schools could really find themselves irrelevant in the next few months to a few years."

Others believe it may become a useful tool, but the basics of schooling won't change. "I've lived through probably nine hype cycles of AI and education where visionaries proclaim that this is the big breakthrough— and then it isn't," says Chris Dede, a Senior Research Fellow at Harvard Graduate School of Education who is an expert on the history of educational technologies. "Generative AI is certainly not, in my opinion, some kind of enormous breakthrough that's going to transform education."

There are real concerns about ceding too much instruction to the program: Weingarten and others fear it will promote educational inequities, further dividing classrooms into students whose families have the resources to afford the high-speed internet connection that eases access to ChatGPT and students whose families do not. There are also worries about biases in the data AI uses to craft its answers to users' prompts.

"Much of the information that's online, that ChatGPT is trained on, is going to be predominantly of western perspective, and what's going to be less represented are the perspectives, knowledge, and experiences of underrepresented communities," says Ezekiel Dixon-Román, Director of the Edmund W. Gordon Institute for Urban and Minority Education and Professor at Teachers College, Columbia University.

And it will be no small challenge for teachers to figure out how to use the technology to develop students' critical thinking skills without sacrificing the connections that can be the product of human-to-human teaching—an even more urgent challenge when it comes to students who mentally checked out during the pandemic. When it comes to getting knowledge to stick, there may be no substitute for human relationships. To many teachers, that's reason enough not to fear the extent of the disruption on the horizon.

"I've been to former students' weddings and baby showers and funerals of their parents," says Millard, the high school English teacher in Michigan. "I've hugged my students. I've high-fived my students. I've cried with my students. A computer will never do that. Ever, ever."—*Updated excerpt from* TIME, *Aug. 8, 2023*

TIME. He wants his students to know what AI excels at, and what is best left to more traditional means.

■ **Art of Collaboration** John Camp, who teaches ninth through 12th grade humanities at New England Innovation Academy in Marlborough, Mass., likes to see teamwork and enjoys a mix of perspectives. That's why his classes use Google's Bard, he tells TIME, to "review three versions of Bard's response to the prompt." Morris adds that students can use it to research potential thesis statements for an essay on *Hamlet*, for example, and then compare them: "It's not writing the essay for them, it's helping direct them."

■ **Debate Coach** The tech makes a solid debate prep partner by modelling what a competitor might say and strengthening students' counterarguments.

GIVING EDUCATORS A HAND

■ **Gaining Perspective** "One of the interesting uses I've seen is teachers just going into ChatGPT and asking, 'What is the best way to teach this?'" says Morris. Elizabeth Delaney, who teaches engineering at NYC's Basis Independent Schools, uses generative AI to "expand my knowledge as an educator or introduce new ideas. You give it a lot of information and it can give you a lot of ideas, but not all of them will be good!"

■ **Planning Lessons** Nneka McGee, chief academic officer for the San Benito Consolidated Independent School District in San Benito, Texas, tells TIME she enjoys generating images and slide decks with the AI software Curipod, which allows her to draw on interest hooks, bullet points, and questions, all in service of building a lesson plan.

■ **Grading Tests** Jennifer Turner, an algebra teacher in New Jersey, saves hours when the app Bakpax grades her students' tests, she tells the *New York Times*. She pays those hours forward with more time for the students, helping them see the true beauty of math.
—*Alexandra Frost*

How to Make AI
Work for You,
at Work

You can feel threatened by AI, or you can harness its power to make some tasks easier so you have more time for creativity, networking, and mastering a brave new world. BY SIMMONE SHAH

Less than a year after many generative AI tools debuted, one-third of McKinsey's survey respondents say their organizations are using them regularly for work.

Before last year, Jana Soldicic's understanding of artificial intelligence was mostly limited to what she'd read on the pages of science fiction novels. But in the fall, after getting the chance to use the technology in real life as she played around with the generative AI tools ChatGPT and DALL·E , she got more curious.

"I really wanted to know what was behind it. I knew it couldn't be magic," Soldicic said.

She searched on her computer and found Elements of AI, a self-paced, online course created by MinnaLearn and the University of Helsinki that provides an introduction to artificial intelligence designed for people without a background in technology. Soldicic was surprised by how much she enjoyed the course.

"I got a little bit addicted to it," she says. "It gave me a basic understanding of what AI is now and what it could be."

The experience gave her a deeper understanding of how artificial intelligence actually operated—far beyond what she might have learned from messing around with the publicly available programs. Now, she's bringing that knowledge to her work as an event planner. "I now have more of an understanding what it could do for me, my work, [and] my colleagues, other than just creating texts or pictures."

Soldicic, who is based in Hamburg, Germany, uses AI text-to-image generators like DALL·E to bring ads and flyers to life with designs that it might have previously been impossible for her to create on her own. "We wanted little squirrels on a tandem bike for one event [flyer], and you could never find such a picture in real life. I put in 'two squirrels on the tandem bike' [on DALL·E] and there were so

many different and cool results. I didn't have to find somebody to realize my idea, I could just do it at home."

Artificial intelligence is expected to drastically change the way most of us work, but it's a shift many are unprepared for. Amid all the chatter around AI, there is increasing concern about the threat it may pose to workers, ranging from marketing executives and software developers to lawyers. A recent Goldman Sachs report found that as many as 300 million jobs around the world could be affected by AI and automation, but a Boston Consulting Group survey found that adoption has so far been largely limited to the C-suite. According to the June 2023 survey, 80% of executives said they used generative AI regularly, while only 20% of frontline employees reported the same. Meanwhile, a study earlier in 2023 by human resources analytics firm Revelio Labs found that the jobs most threatened by AI are largely held by women.

In the face of this change, people like Soldicic are trying to skill up in AI and bring what they learn to the workplace—and many courses are emerging to help them do it.

"It's clear this is one of those moments where people are really trying to get a handle on what's happening," says Dan Brodnitz, Global Head of Content Strategy at LinkedIn Learning. "This is about the opportunity for AI to improve our jobs and to augment our professional lives. To navigate that, people are going to and already [are] super motivated to invest in themselves."

WHAT THE FUTURE HOLDS

Experts say AI will likely transform the workplace, though it is developing so rapidly that we may not know all the ways it could change how we'll be working in the future. A recent survey by McKinsey estimated that generative AI tools could theoretically automate work that takes as much as 70% of an employee's time and that AI could replace half of workers' daily work activities by 2045—around a decade earlier than their previous estimates.

Unlike prior cycles of technological disruption, the shift stands to most impact knowledge-based workers, those in jobs that have traditionally had higher wages and educational requirements, according to McKinsey. (For more on how it's affecting these workers, turn to page 52.) However, experts say the shift will likely mean people will be required to use tools such as generative AI in the same

> ## 'KNOWLEDGE WORKERS FACE THE HIGHEST LEVEL OF EXPOSURE HERE, WHICH IS QUITE DIFFERENT WITH WHAT WE'VE SEEN WITH OTHER REVOLUTIONS.'
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> —Svenja Guddell, Indeed's chief economist

way we use search engines and word processors. "These tools can enable workers to carry out a broader range of tasks and make people more effective," David Autor, a labor economist at the Massachusetts Institute of Technology (MIT), tells TIME. In fact, a 2023 study from MIT found that using ChatGPT boosted productivity for workers who had to complete assignments like writing cover letters or delicate emails. Access to the assistive chatbot cut the time it took to perform these tasks by 40%, while output quality rose by 18%.

"AI is not just about automating jobs and replacing people," adds Erik Brynjolfsson, senior fellow at the Stanford Institute for Human-Centered AI. By far the biggest benefits are having AI work with humans and help them be more productive."

Brynjolfsson, along with researchers Danielle Li and Lindsey Raymond, authored a study in which generative AI was used by over 5,000 customer support agents at a call center, and found that AI tools boosted workers' productivity, reduced attrition, and were especially helpful for early-career workers.

Through machine learning, the generative AI systems were able to use pattern recognition to identify successes and failures in customer service approaches. "It listened in on a whole bunch of transcripts and calls, and could see the patterns that turned out well, the ones that didn't turn out well," says Brynjolfsson. "It captured that tacit knowledge and passed it on to the less experienced workers."

Brynjolfsson said the AI system was able to recommend specific features to solve a customer's problems, or a tone of voice or phrasing that might work better. "Maybe no human had ever written down those rules before but the AI system, by looking at literally millions of transcripts, was able to pick up on these patterns."

AI tools are likely going to impact tasks that are "routine, predictable, or standardized," according to Tomas Chamorro-Premuzic, a professor of business psychology and author of *I, Human: AI, Automation, and the Quest to Reclaim What Makes Us Unique.* Though it might be tempting to brush off the sudden rise of AI tools as just a fad, Chamorro-Premuzic says it's important to become as familiar as possible with the tools, as they are likely to become ubiquitous. "These are tools that everybody will use, and if you're the only person not even trying it out or not using it, you might actually suffer," he says, comparing

AI Jobs You Can Get Right Now

The demand for workers with AI skills has exploded. There were 800,000 AI-related job openings in the U.S. last year, according to Stanford University's Institute for Human-Centered Artificial Intelligence. The Bureau of Labor Statistics projects employment in the fields of tech and engineering will grow by 21% between 2021 to 2031. But there are even high-paying jobs for workers without computer engineering degrees. For example, AI prompt engineers can earn six-figure salaries by developing clear text prompts so that the system delivers more accurate responses to questions. Here, some other opportunities.

California, Texas, and New York have the most AI job postings.

AI engineers use artificial intelligence and machine learning to tailor systems that make business recommendations and also enable organizations to become more efficient and productive.
AVERAGE SALARY $141,692*

AI research scientists investigate new AI techniques, explore ways to improve existing AI systems, and develop new algorithms to solve complex problems.
AVERAGE SALARY $103,626*

Machine learning engineers maintain and improve existing AI systems.
AVERAGE SALARY $151,399*

Data engineers build systems that collect, manage and crunch raw data that is then converted into usable information to help businesses maximize performance.
AVERAGE SALARY $117,964*

Robotic engineers develop robotics for such industries as automotive, defense, aerospace, architecture, manufacturing, and medicine.
AVERAGE SALARY $104,062*

Data scientists determine what questions organizations need to answer and develop predictive models to forecast outcomes.
AVERAGE SALARY $144,078*

AI business consultants help organizations to integrate artificial intelligence and machine learning technologies into their operations.
AVERAGE SALARY $137,885*

AI sales professionals promote and sell AI products and services that increase efficiency and revenue generation.
AVERAGE SALARY $124,194*

AI ethicists ensure that human bias hasn't been introduced into AI systems and develop guidelines for fair practices in the field.
AVERAGE SALARY 121,841
—*Linda Marsa*

*Estimated total pay in the U.S., by Glassdoor
**Salary from ZipRecruiter*

such resistance to deciding not to use Google's search engine. "Nearly all jobs will experience some exposure to AI," Svenja Guddell, Indeed's chief economist, confirms. "Humans are still essential. You need us around to get a lot of this stuff done. But tools like ChatGPT can be helpful in performing some job skills," she tells TIME.

Employers have taken note. A 2023 report from the career site Resume Builder found that 90% of hiring leaders consider ChatGPT proficiency to be a resume enhancer across a host of career categories. "When employers know that an employee or an applicant has experience with AI, that could potentially be more appealing to them, even if they're not a tech company," says Amber Clayton, senior director of Knowledge Center operations at the Society for Human Resource Management. "I think many employers are looking at this right now as an opportunity to be more efficient."

TRAINING UP ON AI

Ville Valtonen, MinnaLearn's CEO and co-founder, believes truly understanding AI is only possible by going back to the basics. MinnaLearn's Elements of AI course teaches students the patterns and probabilities that make artificial intelligence what it is, so they have the confidence to adapt alongside the technology. "The AI field moves so fast. There are hundreds of tools coming daily. So we think it's really useful that people learn the high level things first, and then they can apply that in the world. That's something you can use for much longer than a specific tool," Valtonen says.

The course is free and requires no advanced math or programming experience. "We wanted to create a course for that 99% of people who can't code and still wanted to understand how AI was being used in the world around them," says

Valtonen. More than 1 million people from 170 countries have already signed up to take MinnaLearn's online Elements of AI course. The company also offers a paid version of the program tailored toward businesses and it launched a new chapter on generative AI this summer.

There are also more tailored courses for workers and job seekers looking to learn specific skills. Learners looking to understand the tools that might prove useful in particular roles or sectors could turn to LinkedIn Learning—LinkedIn's educational arm—for example. It offers more than 100 courses covering artificial

> ## 'WHEN THERE'S A DISRUPTIVE TECHNOLOGY LIKE THIS, OVERALL IT'S GOOD FOR THE ECONOMY. EFFICIENCIES IMPROVE AND MORE JOBS ARE CREATED.'
> **—Michael Fry, director of the Center for Business Analytics at the University of Cincinnati**

intelligence, on both the theoretical and practical fronts. These range from "Introduction to Prompt Engineering for Generative AI" to "Artificial Intelligence for Business Leaders." Pricing for an individual LinkedIn Learning subscription begins at $19.99 per month, with the option to pay for individual courses.

The courses are broken down into bite-sized chapters, many of which come in at under five minutes. "We've designed it so you can use the time you have available to learn what you need to learn," Brodnitz says. "It's

all designed to give people a lot of control." Alphabet offers a range of courses through the Google Cloud Skills Boost platform.

Many universities also provide online classes in the new technologies. The University of Pennsylvania, for example, offers "AI Fundamentals for Non-Data Scientists" for $99. Harvard's popular "Introduction to Artificial Intelligence with Python" course is free and taught by professor David Malan, a renowned computer scientist. Platforms like Coursera and edX have even more classes that offer certifications in AI.

Art Munin decided to take some courses on AI after his employer, a tech company that helps colleges and universities with enrollment management, began deploying an AI tool of its own. "After learning about our AI tool, I was not satisfied just trusting that it worked. I wanted to know how it worked," he explained to TIME in an email.

Munin has taken several LinkedIn Learning courses, including "Deep Learning: Getting Started" and "Applied Machine Learning: Foundations." As conversations around artificial intelligence and its use begin to enter public conversation, he says the course has allowed him to better discern fact from fiction when it comes to the impacts and concerns around AI. "There is a gigantic difference between AI being used in military missile defense, for example, and AI supporting the recruitment of college students. These courses have helped me with a language and knowledge base to navigate these complex conversations and advocate for the reasonable use of AI in my field of work."

HOW TO GET STARTED

While there has been some legitimate concern about AI coming for many of our jobs, there are ways

According to a recent CNBC survey, workers who rely on AI for their jobs have a Workforce Happiness Index of 78, seven points higher than among those who don't, and are likelier to have received salary increases that have outpaced inflation.

workers can use AI to help them improve at their jobs. Consider how AI systems might impact your specific field, and whether it can help make your workflow more efficient, suggests Amanda Johnstone, CEO of the technology research and development lab, Transhuman. For example, when trying to brainstorm creative lab experiments that meet specific educational standards, a teacher can ask ChatGPT to help, rather than generating ideas on their own, she says.

It can even be as simple as asking the tool to draft an email or social media post. "Try not to make it too technical," Johnstone says. "You can have AI create 50 social media posts for you. And then spend half a day timing them to post [rather than] the next three months, or you can have artificial intelligence draft the next 10 newsletters for you."

Johnstone advises against approaching the prompt like a Google search. Instead, be specific in how you prompt the tool. "When you're prompting AI or working with AI, you need to think, 'What do I really want the end result to be?'; Do I want it to create a newsletter for our target audience bringing in real-time data?' Think about the end outcome and reverse engineer," she says.

While you don't have to be a data scientist, artificial intelligence is built around data and everybody will be expected to have some comfort level with handling data. But Michael Fry, director of the Center for Business Analytics at the University of Cincinnati, thinks workers will master these skills quickly. "AI will soon become like calculators, simply tools we use without thinking," he tells TIME.

For those interested in experimenting with generative AI tools, experts say a great first step is simply to take the time to play around with them—especially while there are versions of platforms like ChatGPT, DALL·E and Bard that are free. "Have fun with it, test it in your own way, thinking about the problems that you might have," Chamorro-Premuzic says. "It's definitely trial and error."

For some learners, the benefits of using AI at work has been a pleasant surprise. Damian Wolfgram, a California-based product manager who took MinnaLearn's "Elements of AI" course, says that outsourcing more mundane tasks like agenda-setting or double-checking a draft's grammar has drastically increased his productivity. "I'm able to get 80% of whatever that task is done in just 20% of the time," he says. "I'm the benefactor of that, because it frees up my bandwidth to do other things."

The most important piece of advice for those navigating this whole new world? Don't get stressed out about the new technologies.

"Any task that has to do with data processing and anything that's routine, AI will excel at," Kelly Monahan, managing director of Upwork Research Institute tells TIME. "But AI and humans have different types of intelligence and different types of skills. Critical skills, strategic thinking, emotional intelligence and creativity simply can't be programmed. At its best, AI augments human potential—it's not a substitute."—*Additional reporting by Linda Marsa; updated excerpt from* TIME, *Aug. 9, 2023*