ETEC 6440, Spring 2023, CSUSB
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Best Practices for Editing and Refining AI (NLP or LMM)-generated Content

Identifying Instructional Goal

Problem and Opportunity

Problem: Can AI generated content be edited, refined without violating plagiarism and the writer's integrity? AI generated content is deemed controversial as AI, or Artificial Intelligence, has been at the forefront of automatically generating content across the spectrum. The simplicity of the process of content generation is as easy as inputting a question in text format to generate an essay-formulated answer using natural language (Trust, 2023). This simplified process opens the AI chatbot for a lot of potential, with the most concerning being plagiarism in schoolwork.

Opportunity: AI generated content is a fresh innovation and research is just starting to crop around its advantages and disadvantages. This course will provide learners with a fundamental awareness of best practices in editing and refining content, and identify the challenges of editing and refining content. A close look at how to harness its potential would be very beneficial to communities of practice. The goal is to provide a body of knowledge and corresponding skills to educators and learners to identify, review, and edit AI- produced material for educational settings.

Instructional Goal

- Learners will be able to demonstrate an ability to edit and refine AI content through identifying the limits and constraints of AI generated output, demonstrating editing proficiency by incorporating their own writing style to the AI output, while observing style guides and writing integrity standards, and be able to send feedback to the NLP/LMM developer to facilitate improvement.

General Overview of the Learners, Contexts, and Tools

NLP/LMM models have a variety of uses across the spectrum, but for the purposes of this instruction, the learners targeted in particular are higher education students in the context of their corresponding educational systems.

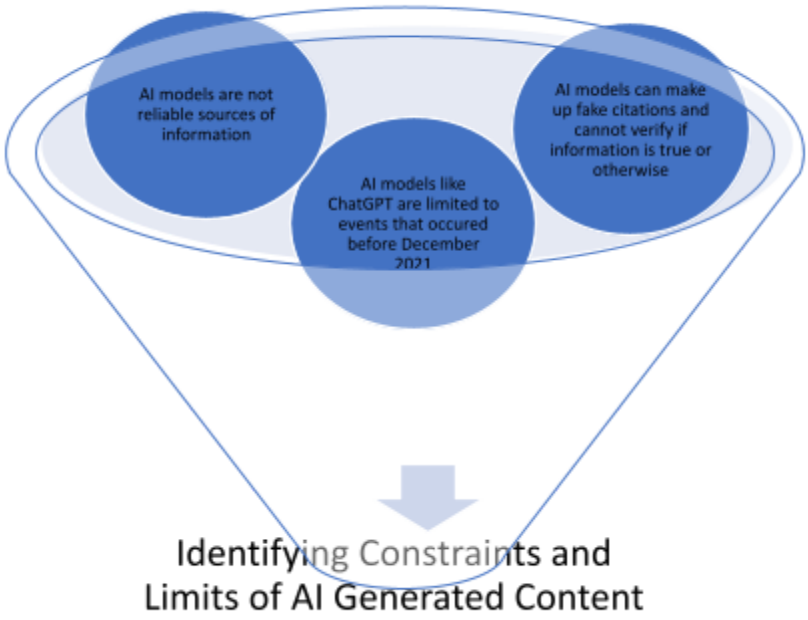
Performance context: Colleges and Universities

Tools needed: Desk and chair, Computer, keyboard, mouse, internet access, knowledge of navigating the internet, ChatGPT account, access to word processing software.

Conducting a Goal Analysis

Goal 1: Identifying constraints and limits of AI generated content

- Learning domain : Intellectual skill
  Constraints:
  - AI models are not reliable sources of information
  - Language models use word probabilities and generates or predicts what word to produce after it runs a task
  - AI models like ChatGPT can make up fake citations and unverifiable information
  - AI content generators are not human, therefore cannot express the same feelings or thoughts the same way we do
  - AI models like ChatGPT can sometimes be limited by capacity and cannot generate at times when the site traffic is heavy.

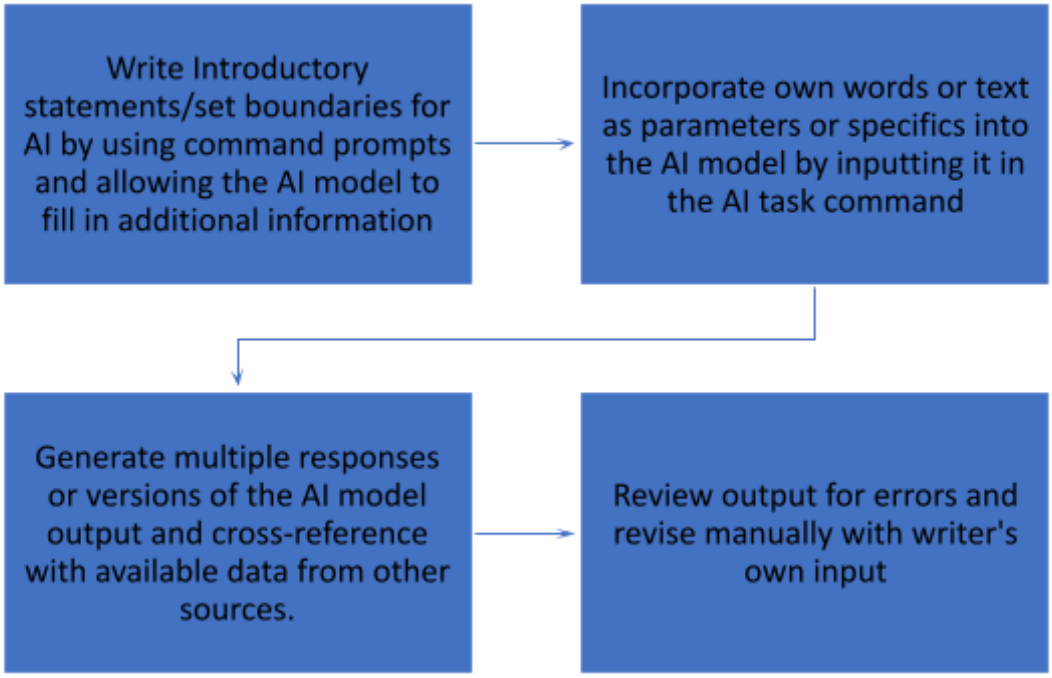


Goal 2: Enhancing editing proficiency skills
Learning domain: Psychomotor skills

How to enhance editing proficiency when utilizing information gleaned from AI content:

- Write introductory statements/set boundaries for AI by using command prompts and allowing the AI model to fill in additional information.
- Incorporate own words or text as parameters or specifics into the AI model by inputting it in the task command.
- Generate multiple responses or versions of the AI model output and cross-reference with available data from other sources. Collate relevant information and add to the body of what is written so far.

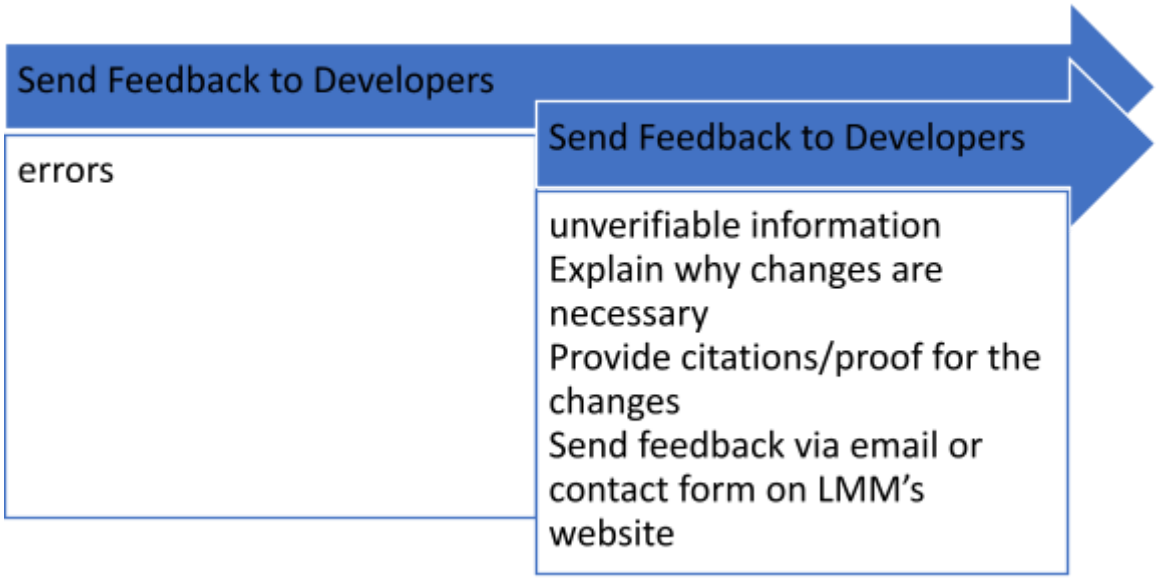
- Review output for errors and revise manually with writer's own input.



Goal 3: Provide feedback to NLP/LMM/AI content developers

Learning Domain: Attitude

Send feedback to AI model developers when errors in information or veracity of information from the output is questionable to aid in



the refinement and the further development of the model.

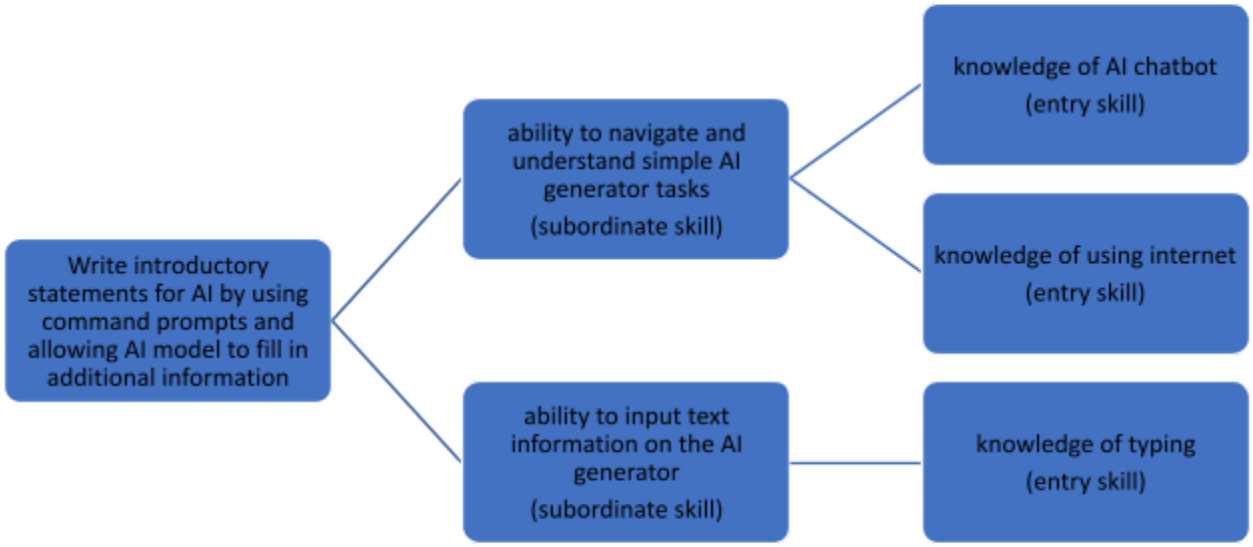
Subordinate and Entry Skills

- Write introductory statements/set boundaries for AI by using command prompts and allowing the AI model to fill in additional information.

Subordinate/entry skills

- Ability to navigate and understand simple AI generator tasks
  - Knowledge of NLP/LMM models
    - Creating an account with the LMM/NLP model
  - Knowledge of using the internet
    - Logging in to the corresponding website
- Ability to input text command on the NLP/LMM content generator

Knowledge of typing



Learners and Contexts

Information categories	**Data sources**	**Learner characteristics**
1. Entry behaviors	Interviews: Target Learners, higher education students Pretest (?)	Learners have knowledge of how to use the internet, opening a ChatGPT account

Information categories	Data sources	Learner characteristics
2. Prior knowledge	Interviews: Target learners, higher education students Pretest (?)	Learners have to know how to type, and navigate websites on the internet, knowledge of how LMM/NLP works and what it can do to improve their productivity with classwork. Learners have to be aware and be mindful of plagiarism rules and as such should know how to edit and paraphrase, as well as incorporate their own thoughts into the material they are writing with the help of the LMM/NLP generator.
3. Attitudes toward content	Interviews: Target learners, higher education students	Learners should develop confidence that they will be able to utilize LMM/NLP such as ChatGpt without compromising their scholastic integrity by making sure that the work they submit in class is content that they have revised, reviewed and edited to reflect their ownership of the material. The course enables and empowers learners in gaining positive experiences in gaining new skills, so much so that they will not be hesitant nor avoid using ChatGPT when writing for school or work.
4. Attitudes toward potential delivery system	Interviews: Target learners, higher education students	Web-based instruction in 3 modules as most students are already familiar with asynchronous learning and would prefer taking the courses independently at their own pace.
5. Motivation for instruction (A R C S)	Interviews: Target learners, higher education students	Learners are more open to using technology to enhance learning and to be able to power through with their writing in situations where they experience writer's block or simply would want to create a strong beginning and organize their thoughts in writing.

Information categories	Data sources	Learner characteristics
6. Educational and ability levels	Interviews: Target learners, higher education students Pretest (/) Records	**Educational:** Learners are higher education students who are required to turn in essays or research work as part of the requirements of their course. **Ability (achievement/aptitude):** Learners who are higher education students are somewhat similar in their abilities, having all gone through secondary school and currently pursuing tertiary or post-graduate education.
7. General learning preferences	Interviews: Target learners,	Learners prefer diagrams, video presentations and simple narratives of the instruction
8. Attitudes toward training org.	Interviews: Target learners,	Learners have previous experience as it is expected that they would already have done some asynchronous learning in the past, and the same goes for e-learning.
9. General group characteristics	Interviews: Target learners, higher education students Pretest Records	a. Heterogeneity: low b. Size: Individualized c. Overall impressions: Motivated, capable

Performance Context

Information categories	Data sources	Performance Context
1. Managerial/ supervisory support	Interviews: Target learners, higher education students	Reward system: intrinsic—independence; extrinsic—ability to write well-crafted articles and/or essays. Amount (time) and nature of direct supervision: Independent

		Evidence of supervisor commitment (time, resources): ?
2. Physical aspects of site	Interviews: Target learners, higher education students Personal observations	Facilities: n/a Resources: N/A (not applicable) Equipment: Computer and accessories, internet connection, access to ChatGpt account Timing: N/A
3. Social aspects of site	Interviews: Target learners, bank tellers, checking account managers Personal observations	Supervision: None Interaction: N/A Others effectively using skills: Other family members or friends typically hold and effectively use checking accounts.
4. Relevance of skills to workplace	Interviews: Target learners, higher education students Personal observations	Meet identified needs: Yes. Current applications: An alternative to research and information-gathering purposes commercial sites,

Information categories	**Data sources**	**Learning Context**
1. Number/ nature of sites	Interviews: n/a	Number: n/a Facilities: None Site visits: n/a Equipment: Computer and accessories Observations: Resources: internet connection, access to ChatGpt account Constraints: None
2. Site compatibility with	Interviews: none Site visits: none	Delivery approaches: some instructional materials can be printed Learner independence: Learners can navigate their way through the course, if needing assistance, a

instructional needs		contact form will be made available through the e-learning course to send questions to the designer. Time: Learners study materials independently and are welcome to pause or break in between the modules. Personnel: No additional personnel are required.
3. Site compatibility with learner needs	Interviews: none Site visits: none	Location (distance): N/A; Learners can study e-learning materials independently anywhere. Conveniences: N/A Space: N/A Equipment: N/A
4. Feasibility for simulating workplace	Interviews: none Site visits: none	Supervisory characteristics: N/A Physical characteristics: N/A Social characteristics: N/A The learning site and the performance site are the same for this instruction.

Performance Objectives

Goal 1: Identifying constraints and limits of AI generated content (learning domain: intellectual skills).

Learners should be able to identify the different limitations and constraints (B) of AI generated content at the onset when preparing the input for the NLP/LMM model and while observing style guides and writing integrity standards (CN). *The query that will be inputted will be reviewed before typing it in as a command (CR) through a checklist. (Italicized statement subject to change).*

Goal 2: Enhancing editing proficiency (learning domain: psychomotor).

Given the combination of the output from the NLP/LMM/AI generator and learner's own contribution (CN), the learner is able to gain editing proficiency (B).

Goal 3: Providing feedback to AI content generation developers to aid in its improvement. (learning domain: attitude)

In the event of errors in processing , disputable, or unverified (CN), learners are able to provide feedback to the NLP/LMM developers (B).

Assessment Instruments

Performance Objective	Test Items
Identifying learning constraints and limits of AI-generated text content .	1. What are the known constraints of ChatGPT? A. AI models are not reliable sources of information B. AI models like ChatGPT can make up fake citations and unverifiable information C. AI content generators are not human, therefore cannot express the same feelings or thoughts the same way we do D. All of the above
Enhancing editing proficiency skills, including proficiency in different writing styles/using style guides and standards.	2. How do you enhance your editing proficiency when utilizing information gleaned from AI content? A. Write introductory statements/set boundaries for AI by using command prompts and allowing the AI model to fill in additional information. B. Incorporate own words or text as parameters or specifics into the AI model by inputting it in the task command. C. Review output for errors and revise manually with writer's own input. D. Use content-editing or plagiarism-checking software like Turnitin, Grammarly, or GPT-Zero
Providing feedback to AI language models developers	3. How do you provide feedback for AI content-generators once errors are identified? A. identify errors by taking a screenshot of the image with the error indicated, note corrections that need to be done. B. Explain why changes are necessary C. Provide citations that justify why such a change is necessary by indicating peer-reviewed articles or sources relating to the industry concerned as benchmarks. D. Do nothing. LMMS are their own authority and know what they are doing.

Instructional Strategy

Performance Objective	Learning Component	Consideration for Each Component	Instructional Strategy
Identify learning constraints and limits of AI-generated text content	Introduction and Background of AI	Provide for motivation	Independent, self-paced learning modules that will aid in learners identifying common constraints and limitations of AI-generated text.
		Relevance	Distinguish between AI-generated content and human-generated content in order to maintain trust, accountability, ethical standards and quality control when conducting research or in writing an academic paper.
		Confidence	Ability to identify common limitations of AI output (e.g. lack of creativity, difficulty with complex language and ideas, limitations in tone and voice). This can be addressed through a quiz with questions that measure levels of comprehension regarding AI output.
		Promote recall of prerequisites. Link new content to existing knowledge/skills	Learners can search the internet for interesting and content showcasing the inefficiencies and errors of AI generators by logging in to their own LMM/AI text generator account and prompting their own questions and comparing these to other internet sources. Examples are presented of glaring errors in AI generated content. Learners are encouraged to do the same and search for information on a place, thing, or idea that they are familiar with and spot for errors.
	Content presentation and learner guidance	Sequence based on hierarchy among skills.	Sequence the content based on the steps order

		Create ways of organizing new into existing skills.	Reviewing ideas that learners are already familiar with, such as grammar, punctuation, and syntax, when identifying errors in AI output
		Disclose distinguishing characteristics of concepts (purpose, physical, quality). Point out common errors in classifying (irrelevant). Provide examples and nonexamples.	Engage learners in learning material through videos and multiple choice quizzes. Provide examples of AI content and non-AI content.
	Learner participation	Ensure congruence of practice to conditions and behaviors.	Have learners identify AI-generated content from human generated content based on principles discussed and examples previously provided
		Progress from less to more difficult. Use familiar contexts for rehearsal.	Have learners input sample questions into
		Provide conditions similar to performance context.	The module is in keeping with the expectation that the learner undergoing the instructional design is a student and adequately equipped with tools necessary to complete the modules as presented.
		Ensure feedback is balanced with qualities and errors.	Assessments are in the form of quizzes, only single questions will be posed, with multiple-choice answers that are clearly outlined in the modules. Learners will have multiple opportunities to retry the quiz if unable to answer correctly.
	Assessment	Ensure learners' readiness for testing. Accommodate hierarchical nature of skills. Apply appropriate criteria for learner age and ability.	Actual skill will be assessed on the posttest at the conclusion of the course.
	Follow-through	Promote transfer (authentic tasks to	Emphasize the need to be able to utilize AI tools to encourage higher-order learning.

		performance context). Consider memory requirements. Consider job aid requirements. Ensure job environment receptive. Reflect on learning experience and future applications.	
Enhancing editing proficiency skills	Understanding writing styles and familiarity and application of writing standards	Provide for Motivation	Familiarity with core concepts provides learners with motivation to utilize AI generator tools to aid in their overall learning
		Relevance	LMMs are expected to be in mass usage in the near future, thus shifting learning emphasis to higher-order learning.
		Confidence	Learners should be confident to utilize AI tools regularly and be able to apply their own writing styles and incorporate AI output in their everyday writing, if necessary. Encouraging statements to motivate learners and to help build confidence in applying what they learned from the preceding sections are included in each segment of the modules. E.g., "You're doing a great job applying the knowledge you gained from the previous module and using that knowledge to apply writing standards to your content shows you have a deep understanding of the material!
		Promote recall of prerequisites. Link new content to existing knowledge/skills	Learners should be able to use learning gained from previous module about limits and constraints to refine their writing and apply common writing standards in conjunction with AI output. The preceding sections to each module

			will have reminders of what knowledge was learned in order to tie in to the next module. There are also thought exercises (labeled as "Something to Think About") at the end of each module which are recaps of the lesson just completed, before proceeding to the quiz.
	Content presentation and learner guidance	Sequence based on hierarchy among skills.	module 2
		Create ways of organizing new into existing skills.	Evaluate editing skills through example activities where AI output is integrated in own writing. Provide examples.
		Disclose distinguishing characteristics of concepts (purpose, physical, quality). Point out common errors in classifying (irrelevant). Provide examples and nonexamples.	Learner can enter prompts for specific topics and check for errors/make edits/refine content.
	Learner participation	Ensure congruence of practice to conditions and behaviors.	Module 3 quiz
		Progress from less to more difficult. Use familiar contexts for rehearsal.	only 1 question will be asked in the module assessment
		Provide conditions similar to performance context.	The module is in keeping with the expectation that the learner undergoing the instructional design is a student and adequately equipped with tools necessary to complete the modules as presented.
		Ensure feedback is balanced with qualities and errors	
	Assessment	Ensure learners' readiness for testing.	module quiz is multiple choice with chances to retake if not answered correctly

		Accommodate hierarchical nature of skills. Apply appropriate criteria for learner age and ability.	
	Follow-through	Promote transfer (authentic tasks to performance context). Consider memory requirements. Consider job aid requirements.	
Providing feedback to AI language models developers	What types of feedback to provide and how to send feedback	Provide for Motivation	Learners are encouraged to be active stakeholders in the development of LMMs as they are most likely to benefit if the system is refined and free from errors and biased information.
		Relevance	LMMs cannot develop on their own without feedback from its users, therefore it is also beneficial for them to fine-tune their process and constantly evolve in the pursuit of higher-order learning
		Confidence	It should be automatic for learners to send feedback where they find errors that need to be addressed. Instructions on how to send feedback, are included in the instruction.
		Promote recall of prerequisites. Link new content to existing knowledge/skills	Learners should be able to apply principles learned from all modules
	Content presentation and learner guidance	Sequence based on hierarchy among skills.	final skill
		Create ways of organizing new into existing skills.	Identify existing skills relevant to providing feedback, e.g. grammar rules, syntax, tone, voice, vocabulary, and factual errors in information. Thought exercises and quizzes for

			each module should provide an opportunity for learners to identify and apply existing skills in providing feedback regarding errors they spot everytime they generate content. Also, reminder statements about the previous module will be presented in the succeeding module.
		Disclose distinguishing characteristics of concepts (purpose, physical, quality). Point out common errors in classifying (irrelevant). Provide examples and nonexamples.	Provide steps in gathering and sending feedback.
	Learner participation	Ensure congruence of practice to conditions and behaviors.	Assessment of learner performance through module 3 quiz and final assessment
		Progress from less to more difficult. Use familiar contexts for rehearsal.	simple assessment question with multiple choice option, and opportunity to retake if not answered correctly
		Provide conditions similar to performance context.	The module is in keeping with the expectation that the learner undergoing the instructional design is a student and adequately equipped with tools necessary to complete the modules as presented.
		Ensure feedback is balanced with qualities and errors	
	Assessment	Ensure learners' readiness for testing. Accommodate hierarchical nature of skills. Apply appropriate criteria for learner age and ability.	Learners should be well-equipped with knowledge needed to pass quiz and final assessment, with accommodations such as multiple choice questions as well as multiple opportunities to pass if not answered correctly
	Follow-through	Promote transfer (authentic tasks to performance context).	Review and assess progress of the AI generator by checking if changes have been applied. Provide a

		Consider memory requirements. Consider job aid requirements.	certificate upon completion of the course.

Logistics and Management for Instructional Strategy

Module	Performance Objective(s)	Student Grouping and Media Selection	Delivery System
1	Identify learning constraints and limits of AI-generated text content	Independent, self-paced videos with narration and slides; but may be instructor-led as well.	Both face-to-face and online, learning management system (Eduflow)
2	Enhancing editing proficiency skills, including proficiency in different writing styles/using style guides and standards.	Same as above	Same as above
3	Providing feedback to AI language models developers [One module can cover multiple performance objectives]	Same as above	Same as above

Instructional Materials

https://app.eduflow.com/course/best-practices-for-editing-and-refining-ai-generated-content

Storyboard

https://docs.google.com/presentation/d/15EM8uHWTRxI91JVDsIpjtiVB63iwRC4crsaXkxdPrzk/edit?usp=sharing

Formative Evaluation and Revision

Purpose of the Formative Evaluation

When designing instruction, it is important to conduct a Formative evaluation prior to its implementation to check for errors in the material, in its navigation, and to recognize the strong points and identify where it needs improvement (Dick, Carey & Carey, 2022). Apart from collecting information and being used as an assessment tool, formative evaluation is a means to improve student and instructor exchanges, as well as foster academic success through use of appropriate learning methods and development of "learning to learn" skills (Komorowska, 2019), where students not only learn for the sake of academic achievement, but for the sheer enjoyment of it.

Tessmer (1993) emphasizes the need to conduct formative evaluations as a result of scientific research over time showing major improvements to learner outcomes to formatively-evaluated forms of instruction, in contrast to results prior to the evaluation. Notably, Tessmer (1993) also outlines the reasons for conducting a formative evaluation–several of which are found to be particularly applicable to this instructional design on Best Practices on editing and refining Ai-generated content, and to this designer's practice of instructional design as well, and these are:

- When the instructional designer is a newbie
- when creating new content (Best practices on editing and refining AI-generated content)
- when the technology (ChatGPT, Eduflow) is novel
- when the learners are new and have not interacted with the designer previously
- when experimental instructional strategies are incorporated into the design
- when the accurate performance of a task is critical to the success of the project
- when the instruction is to be fielded or deployed en masse
- when the ability to review and revise instruction is hindered once it has been implemented.

Of the above-mentioned reasons, the first four scenarios fit within the context of this instructional design project, and justify the usefulness of this exercise in formative evaluation. As it is an iterative process, Dick, Carey and Carey (2022) recommends gathering information, analyzing that information, and making recommendations and revisions through One-to-one evaluation, small group evaluation, and field trial. Due to time constraints, this designer will be limited to conducting an expert evaluation/review, and a one-to-one evaluation with at least three learners.

An expert evaluation will require getting an expert in the field's perspective and clarity and confirmation its objectives, the instruction's adherence to its performance goals, the relevance and accuracy of the instructional content, the suitability of the words used, chunking of the instruction, aptness of learner assessments, among others (Dick, Carey and Carey, 2022). The evaluator, who in this case is also designer, need not be present at the time of the expert evaluation.

A one-to-one requires that learners representative of the intended audience for the instruction become the participants in the evaluation. Three to five of these participants will provide the needed evaluation on an individual basis by way of responses to the evaluation questions through a Google survey.

In ideal conditions, it is recommended that an expert review be undertaken prior to a one-on-one evaluation with learners, however it is not required, and as such, both of these methods will be conducted simultaneously (Tessmer, 1993).

Participant Characteristics

Expert Review

The ideal expert/s for this instructional design's review would be members of academia who are abreast with the latest developments in Artificial Intelligence technology, and who are concurrently conducting research on the subject. In keeping with the concept of the instructional design and to better understand what is expected of the Subject Matter Expert in this case, ChatGPT was asked and promptly responded to the question with the following:

- The expert has broad knowledge of AI and AI content generation and its specifics, as well as the updates and an understanding of how to best utilize the technology;
- The expert has the ability to spot errors and fallacies in the AI generated output
- The expert has to have expertise in Instructional Design principles, especially familiarity with the Dick and Carey model upon which this instructional design is based;
- The expert has to be both observant and meticulous in attending to errors spotted in the content to ascribe to the required accuracy and clarity of the instructional material (ChatGPT3, accessed on 04/20/23).

It goes without saying that communication and collaboration between the expert and the designer/evaluator are essential to be able to construct a good evaluation report and for the instructional design to gain significant improvement.

With these characteristics in mind, the expert review survey questionnaire and link to the instructional materials were fielded to the Facebook Group, Instructional Designers in Education (link Instructional Designers in Education | Facebook) and were recommended by the course professor, Dr. Muljana, for review consideration by a distinguished colleague of hers in the Instructional Design community.

One-to-one

A One-to-one evaluation of learners for this particular instructional design is very critical as the learners must have the ability to identify which areas are needed for improvement as well as glaring mistakes, and to get an overall feel of their reception to the instruction (Dick, Carey and Carey, 2022).

From a One-to-one with learners, a designer/evaluator can find out if the instruction presents clarity, relevance, and usability or transferability (Dick, Carey and Carey, 2022). Further, the evaluator can develop revisions according to effectiveness of the instruction, efficiency, sustainability, and acceptability in its current context (Tessmer, 1993). Being that a One-on-one evaluation is conducted with the individual participants' considerations and preferences of the instructional material in mind, it helps the designer understand and meet the unique needs of each learner by tailoring the instruction to fit these, thereby sustaining the attention necessary to make the instruction successful.

Some considerations in selecting the participants to the One-to-one evaluation are that they are familiar with one of some of the current AI content generators (ChatGPT, Bard, Adobe Firefly, JasperAI, to mention a few). Within the instructional design, there is an option for participants to sign up for a free account with ChatGPT, so having zero knowledge of the subject is acceptable as there will be a form of introduction and the necessary explanations in using the AI software is accessible in the sign up page.

Another characteristic that is ideal in this case would be for the participants to be utilizing AI in producing written content for academic purposes, meaning participants should be students in higher education, but it is not necessary given that AI content generators are not limited in its use. The learners are also expected to be coming from a range of experience as regards use of AI content generators so the answers elicited from each of them will provide a spectrum of reactions and recommendations.

In the exercise of expediency, the participants called upon are the designer's peers from the ETEC6440 course under Dr. Muljana. The designer also deployed the survey questions to the Facebook

groups: ChatGPT in Education, https://www.facebook.com/groups/744858756989529, Instructional Designers in Education https://www.facebook.com/groups/search/groups_home?q=instructional%20designers%20in%20education, and ChatGPT Insights https://www.facebook.com/groups/chatgptinsights for a broader reach and to obtain as much varied information as possible.

Lance Eaton is an instructional designer and PhD candidate who is also an expert on ChatGPT, and has so generously given his time and knowledge to provide an expert review on the course and the course design. He has conducted workshops, talks, and keynote presentations on Artificial Intelligence in Higher Education, and has published articles on Instructional Design Technology, as well designing education experiences.Mr. Eaton is currently Director of Digital Pedagogy at College Unbound in Providence, MA.

Materials and Instruments used in the evaluation (see Appendix I and II for Google Forms surveys screenshots)

Procedure

The evaluation is deployed through Google Forms, a web-based survey platform that provides different types of responses such as Likert scales, multiple choice and short answers. The easy-type response for an item on suggestions for improvements allows users to make edits online with others in a collaborative real-time environment. As mentioned previously, the survey form was posted on select groups as well as Canvas LMS's Question Cafe for ETEC6440.

For expert review, the responses of the SME were recorded using the same style Google surveys, but with a different set of questions. Pretesting was not considered as a separate item but instead was incorporated into the survey material, to serve as demographic identification of each of the participants and as visual markers in graphing their responses.

The evaluation instruments mentioned herein can be found in the Appendix of this document, labeled Appendix I for the Expert Review, and Appendix II for the One-to-one.

Evaluation Report

Expert Review

An interview was conducted with Mr. Lance Eaton on April 25, 2023 via Zoom. Mr. Eaton rated the instructional design a 4, in a scale of 1-5 with 5 as the highest rating. He observed that the objectives are clear and doable, and affirmed that the content kept him engaged and presented relevance. Per Mr. Eaton, the modules and assessments were effective in helping achieve the learning objectives with a rating of maybe 3 or 4 in the scale. As for visual presentation, navigation and overall design, he considers them effective, appealing and user-friendly.

With regard to the course satisfactorily meeting the needs of someone keen on using ChatGPT or Generative AI, Mr. Eaton is of the opinion that the course has good, basic information, except that it does not feel like it pushes enough around the background of understanding and complications of a tool like this (ChatGPT) in terms of the problems and structural issues of this tool in order for it to happen–e.g., leaching minerals from global spaces, technology trade-off, deeper questions. He feels that this was not acknowledged in the course as part of the complicated system.

As for suggestions to improve delivery of the instruction, the SME stated that there are more tangible ways of demonstrating learning even in asynchronous spaces, and to dig into that and find other ways that might have learners grapple with or dig into or explore learning, like spaces for reflection, etc.

In addition, Mr. Eaton mentioned that for a starting designer course, the instructional design was well-done, and that it has good elements. During the interview, the designer brought up that the design follows the principles of Dick and Carey, and that in the process, the assessments/quizzes do not match up as they were devised during the storyboarding and were kind of an afterthought by the time the design was developed, and to analogize, a “carriage-before-the-horse” experience. Mr. Eaton observed that this was typical of the Dick and Carey model, where there are sometimes a lot of things overlooked because of the multiple steps needed to accomplish a design. He also noted that it is difficult to lock in certain elements of the topic because AI/ChatGPT is a moving target, and there are so many things that can be missed because of the constant developments to the technology, so this was understandable.

One-to-one Evaluation

The three responses for this portion of the formative evaluation were from a combination of higher education students and professionals of different fields who have experience in instructional design, where one participant reacted “No" and two reacted " Yes" to “Do you see Artificial Intelligence in a positive light?” For the question, “Can you see AI being adopted for general use in the future?” all three participants responded yes, and qualified their answers with:

- For nefarious uses faster than positive uses;
- Teachers can use it as a starting point to create rubric; Instructional designers can use it as a starting point to create a structure of modules.
- Not enough visual examples, more templates/visuals of AI/ChatGPT; last video says to provide feedback but nowhere to submit feedback, not sure if slide is necessary.

For questions with answers on the spectrum of “Strongly Agree-Disagree-Neutral-Agree-Strongly Agree,” all three participants are in agreement that:

- The instructional material is easy to understand and to follow, and is presented clearly;

- The instruction effectively explained AI and how to use it as a tool for learning by editing and refining content generated from it;
- Examples provided in the instruction were appropriate and useful in learning about the subject;
- The vocabulary used throughout the instruction is easily understandable even for beginners, and is appropriate for the topic, "Best practices in editing and refining AI generated content."

The participants had different responses as regards:

- The details and instructions provided throughout the instruction were enough to prepare the learner on how to edit and refine AI-generated content – one answered "Neutral", and two answered "Agree";
- The assessment questions accurately addressed the topic and were relevant to the subject and the learner experience– one answered "Neutral" and two answered "Agree"
- Navigation of Eduflow LMS is easy and the presentation and organization of each module along with each segment thereafter is pleasing to the eye – one answered "Agree" and two answered, "Strongly Agree;"
- The videos and graphics in the instructional material kept the learner sufficiently engaged and attentive throughout the entire course – two have answered "Agree" and one answered "Strongly Agree;"
- The time it took to complete the course in Eduflow from start to finish is reasonable enough and does not need to be altered – two answered "Agree" and one answered "Strongly Agree;"
- Learning about Best practices in editing and refining AI generated content has given the learner confidence in using AI routinely as a research tool or as part of daily life (e.g., as a substitute to "googling")-- all three participants had different answers – one with "Strongly disagree," one with "Neutral," and one with "Agree."

There were two other questions phrased as "If your answer to the previous question is Strongly Disagree, Disagree, or Neutral, select from the options if the instruction time needs to be lengthened/shortened" respectively, there was one "Agree" answer for both. It was later on determined that the questions should have been phrased differently and is unnecessary.

Further, the three participants provided suggestions and recommendations for the improvement of the course:

- Suggestions and recommendations for improvement (One-to-one evaluation)

Learner 1 Feedback	**Learner 2 Feedback**	**Learner 3 Feedback**
Quiz 1 does not seem to work/questions do not match the lesson	Adding the links similar to how it is done in the ETEC 6440 assignment sections	Two questions "If your answer to the previous question is Strongly Disagree, Disagree, or Neutral, select from the options if the instruction time needs to be shortened" and "If your

Learner 1 Feedback	Learner 2 Feedback	Learner 3 Feedback
		answer to the previous question is Strongly Disagree, Disagree, or Neutral, select from the options if the instruction time needs to be lengthened" do not have the appropriate answer choices
Video 2 needs to be slowed down as the sentences are longer	Not enough images to display a story or illustrate how to	Self-review questions do not seem to be relevant to the content
Explain what an LMM is on the first screen instead of the second screen		Final assessment may not have the appropriate answer options.
Link for the AI Google Form does not have the image upload link mentioned in the lesson		
Revise final assessment -the questions don't match what is being taught		

Revisions

Instructional Revision Analysis Table

Instructional Strategy Component	**Problem Identified**	**Proposed Changes to Instruction**	**Evidence and Source**
Initial Motivation: Objectives Entry Skills	Explain what an LMM is on the first screen instead of the second screen	Explain LMM meaning instead of just presenting an abbreviation	One-to-one evaluation
Pre-test: (survey)	None	None	None
Presentation: Sequence Size of Unit Content Examples	Video 2 needs to be slowed down as the sentences are longer	Slow down video speed	One-to-one evaluation
	Citations do not follow APA style guide	Revise citations to reflect APA style guide	Dr. Muljana's assessment (from the development report feedback)
	Not enough images to display a story or illustrate how to	Show more screenshots of process	One-to-one evaluation
Learner Participation: Practice Feedback	Link for the AI Google Form does not have the image upload link mentioned in the lesson	Update the link	One-to-one evaluation
	Self-review questions do not seem to be relevant to the content	Revise self-review questions to reflect content/Adding Reflections to each	One-to-one evaluation

Instructional Strategy Component	Problem Identified	Proposed Changes to Instruction	Evidence and Source
		module to provide space for learners to introspect on what they have learned and its applicability.	
Assessment: Embedded tests	Quiz 1 is unrelated to the topic	Remove quizzes that are unrelated to modules	One-to-one evaluation/ Peer-review
	Quiz 1 does not seem to work/questions do not match the lesson	Revise quizzes to match the lesson	One-to-one evaluation
	Revise final assessment -the questions don't match what is being taught	Revise final assessment	One-to-one evaluation
	Module 2 quiz set as multiple-choice but, the question said it is multiple answers	Revise module 2 quiz to reflect multiple answers	Dr. Muljana's assessment (from the development report submission)
Follow Through: Retention Transfer	No space provided for learners to write reflections on each module/learning experience	Provide space for reflections	SME/Expert review
	Two questions "If your answer to the previous question is Strongly Disagree, Disagree, or Neutral, select from the options if the instruction time needs to be shortened" and "If your answer to the previous question is Strongly Disagree, Disagree, or Neutral, select from the options if the instruction time needs to be	Disregard/Delete both questions as the previous question "The time it took to complete the course in Eduflow from start to finish is reasonable enough and does not need to be altered" has one "Agree" and two "Strongly Agree" answers, thus no need for supplementary questions.	One-to-one evaluation

Instructional Strategy Component	Problem Identified	Proposed Changes to Instruction	Evidence and Source
	lengthened" do not have the appropriate answer choices		
	Final assessment may not have the appropriate answer options.	Revise final assessment to be more in congruence with all of the modules; or recap the previous module quizzes into the final assessment	One-to-one evaluation

Revised Project

–to follow–

Reflection

–to follow–

References

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Dick, W., Carey, L., & Carey, J. O. (2022). The systematic design of instruction (9th ed.). NJ: Pearson.

Komorowska, H. (2019). Formative evaluation – its past, present and future. Studia Linguistica Universitatis Iagellonicae Cracoviensis, 136(2), 155–167. https://doi.org/10.4467/20834624SL.19.013.10608

Tessmer, M. (1993). Planning and conducting formative evaluations: Improving the quality of education and training. Psychology Press.

Appendix I

Expert review Evaluation Items

Expert review Evaluation Items

1. Overall, how would you rate the instructional design? (Scale of 1-5 with 1 as lowest and 5 as highest)
2. Did the designer present clear and doable objectives?
    a. Yes
    b. No

3. Does the content maintain engagement and present relevance?
    a. Yes
    b. No
4. Are the modules and assessments effective in helping achieve the learning objectives?
    a. Yes
    b. No
5. Is the visual presentation effective and appealing?
    a. Yes
    b. No
6. Are the navigation and the overall design user-friendly?
    a. Yes
    b. No
7. In your opinion, does the course satisfactorily meet the needs of someone who is keen on using ChatGPT or Generative AI?
8. What can you suggest to the designer that would improve the delivery of the instruction?
9. Would you recommend anything else, or do you have other feedback you would like to share?
10. What is your educational background?
11. What field of endeavor do you work in?

Below is the link to the expert review:

https://docs.google.com/forms/d/e/1FAIpQLSc46w-urlCpXZm2Eo4oH2dr4EwGqlUU0qaiO0zAu3atfWKn9Q/viewform?usp=sharing

Expert Review Evaluation Items:

Below are screenshots of the actual evaluation tool:

Expert review of the instructional design on "Best practices in editing and refining AI-generated content"

Link to course on Eduflow: https://app.eduflow.com/course/best-practices-for-editing-and-refining-ai-generated-content

008144390@coyote.csusb.edu (not shared) Switch account

* Required

Overall, how would you rate the instructional design? *

	1	2	3	4	5	
1 as lowest	○	○	○	○	○	5 as highest

Did the designer present clear and doable objectives? *

- ○ Yes
- ○ No

Does the content maintain engagement and present relevance? *

- ◯ Yes
- ◯ No

Are the modules and assessments effective in helping achieve the learning objectives? *

- ◯ Yes
- ◯ No

Are the modules and assessments effective in helping achieve the learning objectives? *

- ◯ Yes
- ◯ No

Is the visual presentation effective and appealing? *

- ◯ Yes
- ◯ No

Are the navigation and the overall design user-friendly? *

- ◯ Yes
- ◯ No

In your opinion, does the course satisfactorily meet the needs of someone who is keen on using ChatGPT or Generative AI?

Your answer

What can you suggest to the designer that would help improve the delivery of the instruction? *

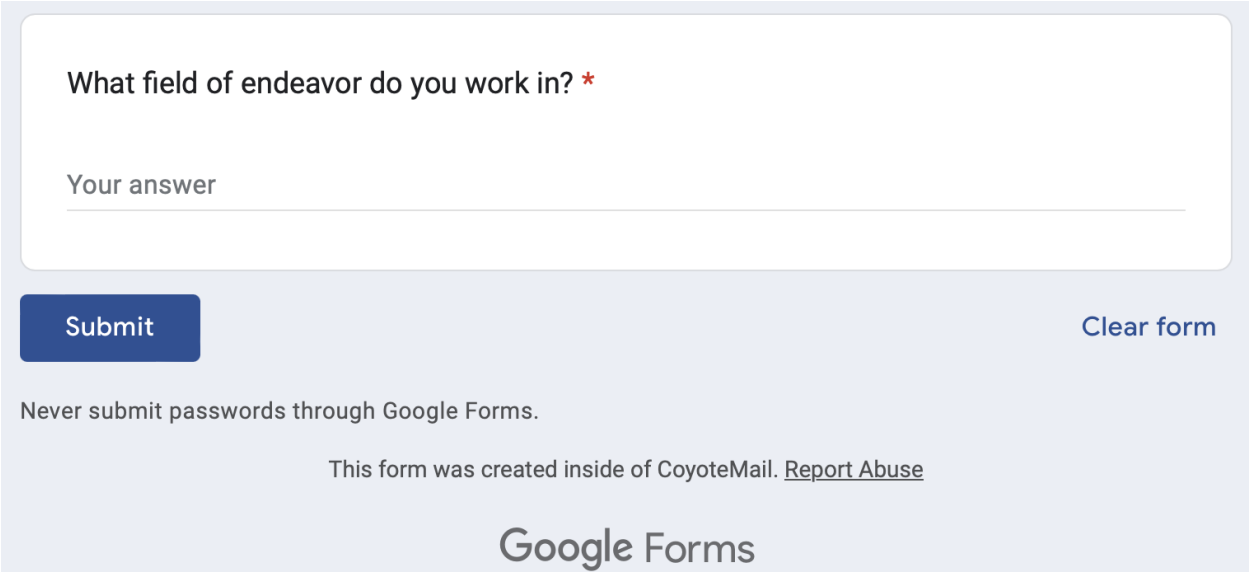
Your answer

Would you recommend anything else, or do you have other feedback you would like to share? *

Your answer

What is your educational background? *

Your answer



Appendix II

One-to-one Evaluation Items

One-to-one Evaluation Items

1. The instructional material is easy to understand and to follow, and is presented clearly.
    a. strongly disagree
    b. disagree
    c. neutral
    d. agree
    e. strongly agree

The instruction effectively explained AI and how to use it as a tool for learning by editing and refining content generated from it.

a. strongly disagree
b. disagree
c. neutral
d. agree
e. strongly agree

2. Examples provided in the instruction were appropriate and useful in learning about the subject.

a. strongly disagree
b. disagree
c. neutral
d. agree
e. strongly agree

3. The details and instructions were provided throughout the instruction were enough to prepare the learner on how to edit and refine AI-generated content

a. strongly disagree
b. disagree
c. neutral
d. agree
e. strongly agree

4. The assessment questions accurately addressed the topic and were relevant to the subject and the learner experience

a. strongly disagree
b. disagree
c. neutral
d. agree
e. strongly agree

5. Navigation of Eduflow LMS (Learning Management System) is easy and the presentation and organization of each module along with each segment thereafter is pleasing to the eye

a. strongly disagree
b. disagree
c. neutral
d. agree
e. strongly agree

6. The videos and graphics in the instructional material kept the learner sufficiently engaged and attentive throughout the entire course.

a. strongly disagree

b. disagree
c. neutral
d. agree
e. strongly agree

6. The vocabulary used throughout the instruction is easily understandable even for beginners, and is appropriate for the topic, “Best practices in editing and refining AI generated content.”

a. strongly disagree
b. disagree
c. neutral
d. agree
e. strongly agree

7. The time it took to complete the course in Eduflow from start to finish is reasonable enough and does not need to be altered.

a. strongly disagree
b. disagree
c. neutral
d. agree
e. strongly agree

8. Learning about best practices in editing and refining AI generated content has given the learner confidence in using AI routinely as a research tool or as part of daily life (e.g., as a substitute to “googling”).

a. strongly disagree
b. disagree
c. neutral
d. agree
e. strongly agree

9. Are you currently a student or a professional? (Please write the answer below)

10. What industry or field of endeavor do you work in?

11. Do you see Artificial Intelligence in a positive light?

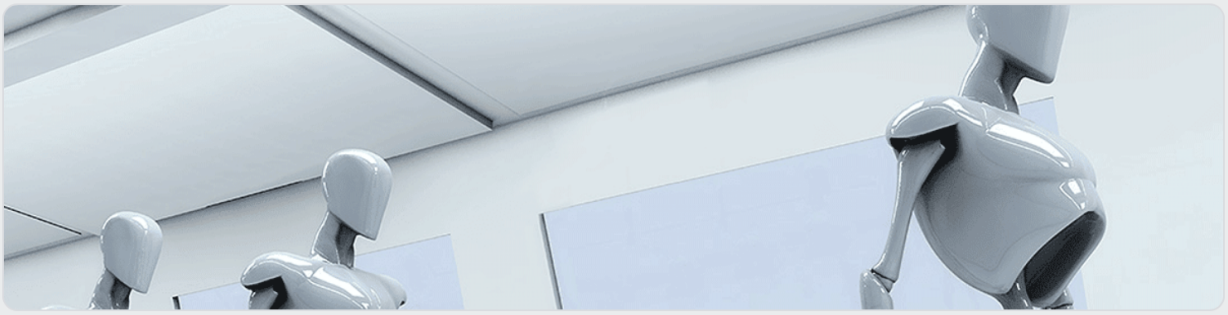
12. Can you see Artificial Intelligence (particularly ChatGPT) being adopted for general use in the future?

13. Suggestions or recommendations for the improvement of this course.

Below is the link to the formative evaluation:

https://docs.google.com/forms/d/e/1FAIpQLSeSRoDoRF2Ecb6t_tWih9ICoe3phtOSzkgA0vx0BGjMIFKxSg/viewform?usp=pp_url

Below are screenshots of the actual evaluation:



One-to-one Formative Evaluation on "Best practices in editing and refining AI generated content"

Link to Course on Eduflow: https://app.eduflow.com/course/best-practices-for-editing-and-refining-ai-generated-content

* Required

Email *

Cannot pre-fill email

The instructional material is easy to understand and to follow, and is presented clearly.

- [ ] Strongly disagree
- [ ] Disagree
- [ ] Neutral
- [ ] Agree
- [ ] Strongly agree

The instruction effectively explained AI and how to use it as a tool for learning by editing and refining content generated from it.

- [ ] Strongly disagree
- [ ] Disagree
- [ ] Neutral
- [ ] Agree
- [ ] Strongly agree

Examples provided in the instruction were appropriate and useful in learning about the subject.

- [ ] Strongly disagree
- [ ] Disagree
- [ ] Neutral
- [ ] Agree
- [ ] Strongly agree

The details and instructions were provided throughout the instruction were enough to prepare the learner on how to edit and refine AI-generated content.

- [ ] Strongly disagree
- [ ] Disagree
- [ ] Neutral
- [ ] Agree

The details and instructions were provided throughout the instruction were enough to prepare the learner on how to edit and refine AI-generated content.

- [ ] Strongly disagree
- [ ] Disagree
- [ ] Neutral
- [ ] Agree
- [ ] Strongly agree

The assessment questions accurately addressed the topic and were relevant to the subject and the learner experience.

- [ ] Strongly disagree
- [ ] Disagree
- [ ] Neutral
- [ ] Agree
- [ ] Strongly agree

Navigation of Eduflow LMS (Learning Management System) is easy and the presentation and organization of each module along with each segment thereafter is pleasing to the eye.

- [ ] Strongly disagree
- [ ] Disagree
- [ ] Neutral
- [ ] Agree
- [ ] Strongly agree

The videos and graphics in the instructional material kept the learner sufficiently engaged and attentive throughout the entire course.

- [ ] Strongly disagree
- [ ] Disagree
- [ ] Neutral
- [ ] Agree
- [ ] Strongly agree

The vocabulary used throughout the instruction is easily understandable even for beginners, and is appropriate for the topic, "Best practices in editing and refining AI generated content."

- [ ] Strongly disagree
- [ ] Disagree
- [ ] Neutral
- [ ] Agree
- [ ] Strongly agree

The time it took to complete the course in Eduflow from start to finish is reasonable enough and does not need to be altered.

- [ ] Strongly disagree
- [ ] Disagree
- [ ] Neutral
- [ ] Agree
- [ ] Strongly agree

If your answer to the previous question is Strongly Disagree, Disagree, or Neutral, select from the options if the instruction time needs to be shortened.

- [ ] Strongly disagree
- [ ] Disagree
- [ ] Neutral
- [ ] Agree
- [ ] Strongly agree

If your answer to the previous question is Strongly Disagree, Disagree, or Neutral, select from the options if the instruction time needs to be lengthened.

- [ ] Strongly disagree
- [ ] Disagree
- [ ] Neutral
- [ ] Agree
- [ ] Strongly agree

Learning about Best practices in editing and refining AI generated content has given the learner confidence in using AI routinely as a research tool or as part of daily life (e.g., as a substitute to "googling")

- [ ] Strongly
- [ ] Strongly disagree
- [ ] Disagree
- [ ] Neutral
- [ ] Agree
- [ ] Strongly agree

Are you currently a student or a professional? (Please write the answer below)

Your answer

What industry or field of endeavor do you work in?

Your answer

Do you see Artificial Intelligence in a positive light?

Your answer

Can you see Artificial Intelligence (particularly ChatGPT) being adopted for general use in the future?

Your answer

Suggestions or recommendations for the improvement of this course.

Your answer