CREATING AN ONLINE COURSE ON MACHINE LEARNING MODELS AT COVEO SOLUTIONS

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This is to certify that the internship report prepared

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complies with the regulations of this University and meets the accepted standards with respect to originality and quality.

Signed by the final examining committee:

_____ Supervisor

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ABSTRACT

As an instructional design intern at Coveo Solutions Inc., I created online courses on machine learning models for Coveo's internal users. The learning objectives I established from this internship included leveraging AI in instructional design, differentiating between a technical writer and an instructional designer, leveraging Katzell-Kirkpatrick's model of evaluation to improve learner performance, providing accurate project estimates, identifying project management skills for instructional designers, and learning storyboarding best practices.

To strengthen my internship experience, I consulted the literature for five themes. The first, AI in instructional design, guided me on how AI can enhance personalized learning, engagement, and efficiency while automating discrete tasks. However, the literature also warned about the possibility of AI leading to hallucinations and incorrect information.

The second theme, comparing instructional design and technical writing, helped me identify the unique competencies associated with each field. The key insight offered by the literature was that, while there are some overlapping abilities, such as communication skills, research skills and knowledge of systems design process, the core objectives and approaches differ significantly in terms of learner's expectations

The third theme, leveraging Katzell-Kirkpatrick's model of evaluation**,** guided me on using evaluation as a tool to engage learners and ensuring that learning objectives are met. The literature suggested that over a third of organizations implement levels 1 and 2 evaluations, while levels 3 and 4 are less common. The literature also found the model more suitable for corporate settings compared to higher education.

The fourth theme, project management skills for instructional designers, guided me on improving estimation strategy. The literature suggested that larger organizations have more

mature project management processes and discussed key project management competencies for instructional designers.

The last theme, storyboarding best practices, guided me on how to see the design through the learner's eye, challenges and best practices in storyboarding. Some key takeaways from the literature included how storyboards aid in planning and organizing learning programs, with a focus on minimizing text through visual representation, and improving collaboration and communication across different stakeholders.

The key deliverable for my internship was creating three out of twelve courses on Coveo's machine learning models. I was involved in design outlining, storyboarding, and assisting in the project planning. Lessons learned included identifying the audience, keeping up with technology, setting realistic deadlines, and valuing development skills.

The courses that prepared me better for my internship included fundamentals of instructional design, human performance technology, introduction to digital media & designing and developing interactive instruction, and educational gaming and modeling.

Suggestions for Coveo include providing more hands-on experience during onboarding and increasing visibility for instructional designers. For Concordia's Educational Technology program, recommendations include more industry-focused hands-on projects, creating official communication channels for current interns as well as alumni, and addressing barriers for international students. Future interns should take digital media courses, network on LinkedIn, create portfolios, and leverage AI tools.

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CHAPTER 1: ABOUT THE INTERNSHIP

The purpose of this chapter is to introduce the organization that hosted me, describe the learning objectives for the experience, and describe the particulars of the placement.

ABOUT THE HOST ORGANIZATION

I conducted my internship at Coveo, a Montreal-based software company that is using Artificial Intelligence (AI) and Machine Learning (ML) to provides a range of software-as-a-service (SaaS) solutions for enterprise search optimization. Using Coveo's solution, the organizations can focus on individual customers who provide personalized experiences.

Think about your Amazon shopping experience where you search a product and get several suggestions that are relevant to you, or think about Netflix, which suggests you the next video you should watch based on your watch history. The difference between them of Coveo is that, while the giant organizations implement AI for themselves, Coveo provides the same capability to smaller organizations that do not have the capability or resources to build it from scratch.

Although the organizational structure of the company changed as it rapidly grows, its structure as of January 2024 was as follows:

1. Chief Executive Officer (CEO), Louis Tetu.
2. Reported to the CEO were:
    a. Office of the CEO, Janine Hout, who lead the workplace experience, was responsible for creating a positive and productive work environment by managing office events, employee well-being, and programs for employee engagement.

b. President and Chief Technology Officer (CTO), Laurent Simoneau, who oversaw technical teams, and ensured that technological resources are aligned with business goals to drive innovation and competitive advantage.

c. Chief Marketing Officer (CMO), Sheila Morin, who oversaw branding, marketing and business growth.

d. Chief Customer Officer (CCO), Patrick Martin, who oversaw professional services offered to customers.

e. Chief Revenue Officer (CFO), Thomas Melzl, who oversaw sales and alliances with business partners.

f. General Manager, platform and install base strategy, Cynthia Connors, who was responsible for the go-to-market strategy and strategic customer acquisition.

g. Strategic Advisor, Guy Gauvin, who provided high-level guidance and expertise to support the company's strategic initiatives and decision-making processes, leveraging his extensive experience and knowledge in the industry.

h. General Manager, Commerce, Lisa Grayston, who oversaw all Commerce teams and ensuring cross-functional alignment both within the organization and with strategic partners.

i. Chief Financial Officer (CFO), Brandon Nussey, oversaw business value, finance, Human Resource (HR), and legal. operations

3. Reported to the CFO, Brandon were:

a. Vice-President, legal affairs, Anne Theriault, who managed the legal operations.

b. Vice-President, Human Resource (HR), Claude-Antoine Tremblay, who managed HR operations.

c. Chief Information Officer (CIO), Dominic Lajoie, Nick Goode, oversaw the digital strategy & release management.

d. Senior Vice-President, Finance, Karin Hamel, who oversaw finance and procurement.

e. Chief Business Officer (CBO), who oversaw operations and investor relations.

f. Vice-President, Business Value and Global Enablement, Alex Dassa, oversaw eleven team leads working on business strategy and value, business development, education services, and knowledge management.

4. Reported to the Vice-President, Alex Dassa were:

a. Senior Technical Enablement manager, Bruno-Pascal Roy-Dumas, who managed product enablement (process that equips users with the necessary technical knowledge and skills to benefit from a company's offerings) managers.

b. Senior business development enablement manager, Liz McConomy, who managed internal and external enablement (providing users with the necessary tools, resources, or permissions to perform specific tasks or functions).

c. Director, Business Value, Romain Tiry, who managed business strategy, identified strategies to maximize business benefits, and achieve desired outcomes through comprehensive analysis and strategic guidance.

d. Knowledge manager, Sonia Benhallou, who was responsible for developing,

implementing, and managing the organization's knowledge management strategies and practices to ensure effective knowledge sharing and utilization across the company.

e. Senior education manager, Education Services, Christine Daviault, who managed a team of seven instructional designers and two media production specialists.

5. Reporting to the senior education manager, Christine are:

    a. Senior Instructional Designer, Laurent Castellucci, who designed and developed training for the customer platform function.

    b. Instructional Designer, Danielle Joffe, who designed and developed training for the customer platform function along with Laurent.

    c. Senior Instructional Designer, Laura Nunes, who designed and developed training for the commerce function.

    d. Instructional Designer, Erika Lisi, who is a Concordia alumni and designed and developed training for the commerce function along with Laura.

    e. Instructional Designer, Marcelo Arce, who designed and developed training for the service function.

    f. Production specialist, Alex Caroussos, who created the guidelines for usage of multimedia in a course and contributed to course development.

    g. Production specialist, Carole Chao worked along with Alex to create templates and occasionally contributed to the development of courses.

I worked with the Education Services team during my internship.

About the Internship Project

In a previous summer job, I worked as a technical writer intern for Coveo. However, since the internship program at prevents people from performing internships in their current positions, I could not conduct my internship in technical writing. Fortunately, the program allows for someone to perform an internship in a different job at the same organization, and Coveo had an open position of an instructional design intern at the time, that I was able to secure.

As an instructional design intern, I was assigned to create three out of twelve courses on Coveo's machine learning models. Machine learning (ML) involves training algorithms and statistical models to perform specific tasks effectively without being explicitly programmed. Instead of relying on pre-set rules, machine learning models learn from data, identifying patterns and making predictions or decisions based on that learning. In the context of Coveo, it leverages Machine Learning models to analyze vast amounts of data, including user behavior patterns, search queries, and content interactions, to understand what users are seeking and what content best meets their needs. This data is then fed to organizations in sectors like customer service, e-commerce, etc., to provide users with personalized experience.

The purpose of the course was developing internal training courses on Coveo's machine learning capabilities for its commercial teams to equip them with a deep understanding of how the company's AI-powered solutions work. The commercial teams were those who interact directly with the customers and partners. The primary purpose of these courses was to enable the commercial teams to effectively communicate the value proposition and

competitive advantages of Coveo's machine learning models to potential customers and partners. These teams included business development executives, sales engineers, customer success managers, account executives, professional services specialists, and technical support specialists.

Specific tasks in preparing this training program included:

1. Conducting a needs analysis that would conclude with the needs identified and a more complete schedule for preparing the course, including milestones.
2. Preparing the design outline plans for the redesigned course (known as fast-track-ed-plan internally).
3. Preparing storyboards with the course content in PowerPoint slide decks.
4. Producing the course, including recording narration, finalizing visuals, and similar activities.

Table 1 shows the dates of completion of each task.

TABLE 1

Work Plan (Internship period: January 8, 2024 – May 3, 2024)

Task	**Anticipated completion date**
Needs analysis	January 31, 2024
Design plans (outline)	February 7, 2024
Storyboard(deck) template	March 1, 2024
Storyboards all courses	April 16, 2024

Online courses on LMS April 30, 2024

LEARNING PLAN FOR THE INTERNSHIP

This section presents the learning plan for the academic component of my internship. It begins by highlighting the relevant qualifications and background that prepared me for this internship role. Subsequently, it details the specific knowledge and skills that I already had and how these skills were acquired.

Table 2 lists the specific characteristics sought by Coveo as per the job description, including the skills, knowledge, and experience I brought to the position.

Table 2

Characteristics Sought by the Employer and Skills, knowledge, and Experience I Bring

Characteristics sought by the employer	**Skills, knowledge, and experience I bring**	**How I developed these skills, knowledge, and experience**
Work closely with SMEs to develop learning material primarily intended for onboarding and supporting	**Skills**: Communication, analytical mindset, research, evaluation **Knowledge**: Needs analysis,	**Formal learning**: Fundamentals of Instructional Design (ETEC 650) and Fundamentals of Human Performance Technology (ETEC 651) prepared me to conduct needs analyses through classroom projects and in-class discussions. Introduction to Digital Media (ETEC

Coveo employees and that is engaging and meets business objectives.	Design, development **Experience**: Interacting with stakeholders for program creation, assessment, and continuous improvement. Designing and delivering in-person and virtual training.	665) and Designing and Developing Interactive Instruction (ETEC 669) helped build skills in designing and developing interactive instruction. **Informal learning:** Lunch and coffee chats with Project Managers and software developers, while I was working as a QA engineer in India helped me learn business flows. **Previous work experience:** Honed educational research in previous jobs as a program manager for Edumust, a not-for-profit education management compay in India.
Characterize the learners, their priorities, and what's been working (or not!) in the current documentation	**Skills**: Communication, time management, research, estimation, evaluation **Knowledge**:	**Formal learning**: Administering Educational Technology Groups (ETEC 671) helped improve my skills at managing and estimating projects. Fundamentals of Instructional Design (ETEC 650)) and Fundamentals of Human Performance Technology (ETEC 651)) prepared me to conduct

and training provided to them.	Project management, needs analysis **Experience**: Interacting with stakeholders for program creation, assessment, and continuous improvement, working closely with technical stakeholders.	needs analysis through classroom projects and in-class discussions. **Informal learning:** Explored tools such as Asana, project management, JIRA, and listening to podcasts by Brad Aeon, a time management researcher, to improve time management.
Recommend learning strategies and blended learning approaches, as well as appropriate activities to achieve learning objectives.	**Skills**: Research, problem solving, analysis, synthesis, communication, evaluation **Knowledge**: Needs analysis, system thinking,	**Formal learning**: Fundamentals of Instructional Design (ETEC 650)) and Fundamentals of Human Performance Technology (ETEC 651) prepared me to create strategies and resources using blended learning approach through hands-on activities and capstone projects. Learning Theories (ETEC 613) taught me the adult learning principles to help me develop appropriate learning activities for my audience.

	design thinking, adult learning theories, bloom's taxonomy, surveying **Experience**: Interacting with technical stakeholders, Developing learning objectives	**Informal learning:** Created various surveys and did informal interviews with colleagues in non-formal settings. Learned to use tools such as Qualtrics. **Previous work experience:** Created lesson plans as a teacher in India. Trained teachers on creating learning objectives at the company Edumust as well as created learning programs based on needs analysis.
Create materials in a variety of delivery formats for new and existing courses and programs.	**Skills**: Problem-solving, analysis, brainstorming, research, synthesis, media creation, media editing **Knowledge**: Design,	**Formal learning**: Design and development skills gained in Introduction to Digital Media (ETEC 665) and Designing and Developing Interactive Instruction (ETEC 669). Tools learned including Adobe Creative suite, Articulate Rise, and Klynt. Detailed design plans created for Fundamentals of Human Performance Technology (ETEC 651) provided opportunities to consider several formats

	development, ID theory, HPT theory, **Experience**: Creating learning programs using media such as graphics and videos.	for proposed interventions. **Informal learning:** Explored authoring tools and LMSes out of self-interest. Extensive research done on website development and tried multiple tools for development while creating my portfolio in Wordpress. **Previous work experience:** Designed a detailed curriculum on coding for young learners for my previous work at Bright School. Created micro lessons in video format as part of TESOL 150 hours certification. Created online asynchronous video tutorials for teacher training while working with Edumust.
Analyze use and feedback of instructional materials to strengthen them	**Skills**: Research, reporting, analytics, time management,	**Formal learning**: Fundamentals of Instructional Design (ETEC 650) prepared me to design evaluations of student satisfaction and learning (Katzell-Kirkpatrick Levels 1 and 2). **Informal learning:** Created content on

	surveying, brainstorming, estimation, evaluation **Knowledge**: Needs analysis Usage analytics **Experience**: Interacting with technical stakeholders.	various social media platforms such as YouTube and TikTok and analyzed the usage reports to identify ways to improve the content. **Previous work experience:** Performed baseline, mid-year and end of year assessments to evaluate teacher performance and improve the design of programs when working at Edumust in India.
Create courses in a the LMS Level Up (internally developed at Coveo).	**Skills**: Authoring, coding, development **Knowledge**: Interactive learning, gamification **Experience**: Authored content in multiple authoring	**Formal learning**: Design and development skills gained in Introduction to Digital Media (ETEC 665) and Designing and Developing Interactive Instruction (ETEC 669). **Informal learning:** Learned HTML and Cascading Style Sheets (CSS) while developing my website. This knowledge was useful in learning asciidoc which is a markup language used by Coveo for developing courses.

	tools, created own website.	**Previous work experience:** Learned Asciidoc when working as a technical writer in a previous internship at Coveo.

Table 3 presents the learning objectives I established for this internship, the strategies I planned to achieve them and the performance indicators that I used to measure my progress.

Table 3

Learning objectives, strategies, and performance indicators

Leveraging AI tools in instructional design				
Learning Objectives	**Competencies I already have**	**Competencies I need to develop**	**Strategies to reduce the gap**	**Performance indicators**
Analyze the available tools to determine the tools that fit the organizational requirements	**Skills:** Exploration, design thinking, programming **Knowledge:** large language models **Attitude:** Problem solving, curiosity	**Skills**: Planning, productivity measurement, budgeting, quality control **Knowledge**: Utilizing Learn Experts AI (LEAi) tool, metrics to	Read literature related to AI LLMs, and tools specific for IDs. Discuss with industry experts who have experience working with various AI tools	Comparing tool's outcome to the business requirements. Percentage increase in number of courses and feedback worked on
Implement Generative AI tools to enhance quality of				

instructional material	**Professional experience:** Used AI LLM tools in previous experience as a technical writer.	analyze AI tools for learning	and understand the technical details of how these tools work.	during the quarter Reduction in time spent on tasks with similar complexity

Comparing competencies of instructional design with technical writing

Learning Objectives	**Competencies I already have**	**Competencies I need to develop**	**Strategies to reduce the gap**	**Performance indicators**
Compare the responsibilities of an instructional designer with a technical writer.	**Skills:** Research, communication, design thinking, **Knowledge:** systems design approach **Attitude:** Analytical mindset, curiosity	**Skills:** Exploration, articulation, synthesis, interviewing, critical thinking, collaboration, continuous learning, presentation	Read industry-specific books, articles, and research papers on instructional design and technical writing. Connect with both professionals in	Present the skills needed for both roles and clarifying the myths around this topic. Share information through online forums such as LinkedIn and similar
Contrast the skills needed for both professions				
Discover if	**Professional**	**Knowledge:**		

these two professional skills can be replace by each other	**experience:** Technical writer internship done at Coveo during previous summer	Industry standards, comparative analysis	my company, and through LinkedIn.	professional spaces

Leveraging Katzell-Kirkpatrick's model of training evaluation

Learning Objectives	**Competencies I already have**	**Competencies I need to develop**	**Strategies to reduce the gap**	**Performance indicators**
Evaluate level 1(reaction), and level 2 (learning) information through the in-house learning management system	**Skills:** Evaluation, surveying, interviewing, feedback, learning management system administration	**Skills:** Planning, relationship building **Knowledge**: Applying reverse-engineering approach of evaluation, terminology related to measuring results.	Listening to podcasts and recordings available on Kirkpatrick partner's website. Understand the goals and aspirations of the learners through discussions with	Feedback from the learners. Performance of the learners for different evaluation tools used
Identify opportunities to implement level 3 and level 4 evaluation	**Knowledge:** Kirkpatrick model, EGRA model **Attitude:**			

	Analytical mindset, Continuous improvement **Professional experience:** Surveyed and interviewed teachers, parents and assessed students using EGRA model for Edumust, India.	enablement team and supervisors. Read the literature on evaluation models.		
Identify project management skills for instructional designers				
Learning Objectives	**Competencies I already have**	**Competencies I need to develop**	**Strategies to reduce the gap**	**Performance indicators**
Communicate with stakeholders to clarify the roles and expectations	**Skills:** Collaboration, Analysis, active listening **Knowledge:** ADDIE,	**Skills:** Asking the most relevant questions, building stakeholder	Refer with instructional design specific project management plans.	Demonstrate accurate planning in terms of setting up milestones and timelines.

Provide accurate estimates for design and development of a learning program	**Attitude:** brainstorming, curiosity **Professional experience:** Worked on creating education programs for schools in India.	relationship **Knowledge**: Project level estimation, management, planning	Assist my on-site mentor/supervisor in their estimation ventures. Discuss project objectives with the SMEs and the teammates	Meet the quality of deliverables in the stipulated deadlines.
Compare ADDIE process with project management process				

Learning to support the preparation of storyboards

Learning Objectives	**Competencies I already have**	**Competencies I need to develop**	**Strategies to reduce the gap**	**Performance indicators**
Identify the designs and visuals that go in line with the company branding	**Skills:** Visualization, implementing interactive instructions **Knowledge:**	**Skills**: Project management, adaptability, accessibility, **Knowledge**:	Familiarize with tools that can be used to create the template using organization	User engagement Program completion rate Usage analytics

Identify storyboarding best practices to visualize information effectively	Authoring tools, graphic design **Attitude:** Creative thinking **Professional experience:** Worked on creating education programs for schools for Edumust, India.	Coveo product, Accessibility guidelines, legal and ethical consideration, behavioral psychology	branding. Read literature to identify best storyboarding practices, or which ones work for internal vs external stakeholders.

PARTICULARS OF THE INTERNSHIP

This paid internship started January 8, 2024, following an internal transfer from the technical writer intern position to the instructional designer intern position. The internship was completed May 3, 2024, after 675 hours of work. I worked full-time, Monday through Friday, 40 hours per work.

During my internship, I worked in a hybrid work setting, spending two days in the office and three days working remotely from home. Coveo provided me with the necessary equipment and software to perform my duties effectively. This included a 16-inch MacBook Pro, an additional screen, the Adobe Creative Cloud suite, TechSmith Camtasia, Figma, Adobe

Captivate, Microsoft office suite and Google drive suite. To ensure a smooth transition into my role, Coveo implemented a personalized 30-day onboarding program called "Coveo30." It outlined a comprehensive list of activities designed to help me gain a thorough understanding of Coveo's products, complete required training sessions, and align with the team's expectations. The Coveo30 onboarding period played a crucial role in equipping me with the knowledge and resources necessary to succeed in my internship.

Communication was central to this internship as three stakeholders were involved including the faculty supervisor, on-site supervisor and the internship coordinator.

To communicate with the faculty supervisor and internship coordinator, I submitted a log after every 135 hours of work completed. The logs reported dates and number of hours worked since the last log, total number of hours completed in the internship, key accomplishments during the period, lessons learned, messages for the faculty supervisor and structured abstracts for the readings completed during this period.

I communicated with my on-site supervisor in person once every two weeks as part of our bi-weekly check-ins. Other than this, we met regularly for the project needs as the situations required so.

In addition, my internship coordinator, on-site supervisor and I met virtually on March 26, 2024, to discuss the progress of the internship project and towards the learning objectives of the internship.

Table 4 lists the key members of the internship team.

Table 4

Details of the coordinators and supervisors of the internship

Internship coordinator	On-site supervisor	Academic supervisor

Rosa Cerone, Internship Coordinator
Concordia University
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CHAPTER 2. LITERATURE REVIEW

This chapter describes the lessons from the literature that influenced my internship at the Coveo Solutions Inc. This section starts with a brief explanation of the process followed to select the literature, followed by key takeaways from it.

THE PROCESS TO SELECT THE LITERATURE

To select literature to read during my internship, I first referred to some of the materials from courses in the educational technology program and that I considered were most relevant to the internship project: instructional design for online learning environments, multimedia learning principles, project management competencies for instructional designers and evaluation of online training effectiveness. Next, I searched for additional peer-reviewed articles in online databases through google scholar, EBSCO, IEEE Xplore, and Concordia's Sofia Discovery tool. The platforms that I navigated through these databases included Taylor & Francis Online, Springer, Wiley Online Library, and Emerald Publishing. The keywords that I primarily used to search included "AI in instructional design", "Impact of AI in L&D", "Instructional Designer competencies", "Technical Writer competencies", "Impact of Kirkpatrick model of evaluation in corporate training", "Project Management skills for Instructional Designers", and "storyboarding practices for instructional designers". I specifically looked for material on these topics that align with the learning objectives for this internship:

- Using AI to improve efficiency of Instructional designers.
- Skills and competencies instructional designer need to be successful on the job.
- Skills and competencies technical writers need to be successful on the job.

- Katzell-Kirkpatrick model implementation in tech companies.
- Comparing training design approach for internal vs external learners.
- Storyboarding techniques to present the information effectively.

LESSONS LEARNED FROM THE LITERATURE

This section reports what I learned about these themes that I explored in the literature to support my internship project: using AI in Learning & Development (L&D); comparing the skills and responsibilities of an instructional designer with a technical writer; leveraging Katzell-Kirkpatrick's model of evaluation to improve learner engagement and performance; and storyboarding best practices.

Theme 1. The Role of Artificial Intelligence in L&D

Given that Coveo focuses on producing applications that incorporate AI, employees are encouraged to use AI in everyday tasks to improve efficiency. For example, while I was working as a technical writer in my previous position, the team had an enterprise license for Github (Microsoft) Co-Pilot inside Visual Studio. Visual studio is an authoring software, much like Microsoft word, but customized for software development. Copilot is an intelligent assistant that provides support and suggestions for various tasks, such as content creation, summarizing information, etc**.** Co-Pilot added features such as personalized chat and generating new content automatically based on the existing content in Visual Studio. Hence, when I started the instructional design internship in Winter 2024, I wanted to further explore the use AI for L&D tasks. The learning from the literature were:

Artificial Intelligence is Reshaping Instructional Design in Higher Education

In addition to strong instructional design skills, some futurists in the field anticipate that

instructional design professionals in higher education will need AI skills (Ch'ng, 2023). That is because AI already seems to be affecting other fields. For example, Anantrasirichai (2021) noted that in the past five years, AI use in the creative industries, such as content creation and copywriting has increased. Davies et al. (2020) shows a 500% increase in AI-related publications (which are written or digital works that focus on the study, development, applications, or implications of artificial intelligence systems and technologies). Anantrasirichai (2021) further mentioned that Taiwan experienced a 1490% rise in AI-related publications mainly focusing on image-based data. "Analysis on company usage from the Crunchbase database indicates that AI is used more in games and for immersive applications, advertising and marketing, than in other creative applications" (Anantrasirichai, 2021, p.590). Caramiaux et al. (2019) reviewed the impact of AI on creation, production, and consumption in media and creative sectors, noting significant trends such as the successful application of AI techniques like deep learning to various data types for tasks like labeling, translation, and generation, the use of AI for creative applications like generating visual representations from text and separating audio sources in music, and the role of AI in enhancing digital content consumption through features like efficient image search and transmedia storytelling across platforms.

These general trends are mirrored in instructional design practices in higher education. For example, Ch'ng (2023) explored the impact of AI on instructional design processes and found that instructional designers used AI o streamline content creation, analyze learner data, automate processes, enhance visual elements, and improve the overall quality of instructional materials. When doing so, instructional designers experienced challenges such as ensuring the accuracy of AI-generated content, navigating ethical concerns, integrating AI tools effectively, and balancing automation with human creativity. She also found that the integration of AI tools in instructional

design processes led to increased efficiency for instructional designers and personalized learning experiences, leading to enhanced student engagement.

"With the growing popularity of AI, some new emerging roles are expected to emerge in the AI-enabled learning ecosystem. These roles include AI content strategists, content accessors, and AI technology specialists" (Ch'ng , 2023, p.38). For example, an AI Content Strategist collaborates with subject matter experts to create and enhance personalized learning materials. Content Assessors are SMEs who ensure that AI-generated content is accurate and relevant. Learning Experience Designers integrate AI tools, such as chatbots, to create engaging, personalized learning experiences. AI Technology Specialists use AI tools to develop educational materials and help educators and students integrate these technologies into their teaching and learning processes.

The emergence of AI-enabled roles like content strategists and technology specialists highlights the potential for leveraging AI to enhance learning and development initiatives within organizations. These roles can help bridge the gap between cutting-edge AI technologies and the design of effective, personalized training programs tailored to employee needs.

The Role of AI in Personalizing Learning Experiences in Workplace Learning

In addition to affecting instructional design in higher education, AI has impacted Learning and Development (L&D) in organizations.

For example, organizations can use AI to do the following:

- Upskill employees. Upskilling is to improve the competencies of employees through additional training and development initiatives. To upskill employees, AI can provide targeted training and development opportunities tailored to individual needs and learning preferences (Pavithra, 2023).

- Provide personalized learning experiences. Personalized learning experiences are to provide customized educational interactions tailored to individual preferences and needs. To provide these experiences, AI algorithms can analyze learner data to tailor content to individual performance learning preferences and performance. Adaptive learning platforms adjust course difficulty based on performance. Recommendation engines (also called recommender systems) suggest relevant materials to support learning goals. Feedback analysis provides insights the system uses to refine for content, and Natural Language Processing enables learners to have conversational and personalized interactions with the system. There was a huge demand for personalized learning but providing it also means continually updating to training content to ensure relevance and alignment with individual learning needs and evolving organizational requirements (Maity, 2019).
- Perform strategic HR tasks, such as data analysis, customer service interactions, and predictive maintenance. For example, AI can automatically review applications and recommend qualified candidates for job positions, as well as analyze customer behavior patterns to personalize marketing strategies. Hence, it frees up HR professionals to focus on strategic tasks such as talent development initiatives and workforce planning Pavithra (2023).

AI-Based Adult Education Model

Gao (2023) notes how artificial intelligence (AI) technology can be integrated into the field of adult education. Naming it the AI-Based Adult Education Model, Gao (2023) sees opportunities to leverage the capabilities of AI to enhance the educational experience for adult learners. Four major challenges in traditional adult education that AI can help address were identified in the literature:

- The lack of standardization in adult education programs refers to the absence of uniform

guidelines and criteria for curriculum planning, leading to inconsistencies in educational quality and resource utilization; AI addresses this by providing personalized learning environments, tailored resources, and implicit learning activities to enhance the educational experience for adult learners (Maity, 2019).

- Conflicting demands on learners' time and responsibilities result from the diverse backgrounds and commitments of adult learners, making it challenging to balance work, study, and personal life; AI addresses this by offering flexible learning schedules, personalized content delivery, and adaptive learning platforms to accommodate individual needs and optimize learning efficiency Gao (2023).
- Weak links between theoretical knowledge and practical skills, such as learning abstract concepts without practical application, can hinder learners' ability to transfer knowledge into real-world scenarios; this gap limits the effectiveness of adult education programs in preparing learners for practical challenges. AI addresses this by providing interactive simulations, hands-on experiences, and real-time feedback to bridge the gap between theory and practice, enhancing the application of knowledge in practical settings Gao (2023).
- The shortage of qualified teachers in adult education results in a lack of expertise in adult learning methodologies and limits the availability of high-quality educational resources for adult learners; AI addresses this by offering virtual tutoring, personalized learning support, and AI-powered teaching assistants to supplement traditional teaching methods, ensuring a more engaging and effective learning experience for adult learners Gao (2023).

Challenges of AI in L&D

The literature also notes several challenges with AI in L&D. One is hallucination. Hallucination is the generation of false or inaccurate information presented as factual by AI systems. This is a problem because it can lead to the spread of misinformation, biased or harmful content, and undermine trust in AI technologies (IBM, 2023).

A second challenge cited by Hoffman (2018) was using AI in L&D is the lack of context understanding. AI systems may produce outputs that deviate from the intended meaning or context due to their inability to comprehend the underlying reality or nuances. This is a problem because it can result in irrelevant, nonsensical, or inappropriate content being generated, undermining the effectiveness of AI-powered learning experiences.

A third challenge of using AI in Learning and Development (L&D) is the lack of transparency in the decision-making process. This is a problem because without clear visibility into how AI systems arrive at their conclusions, it becomes difficult to trust the outcomes and make informed decisions based on the generated insights (Hoffman, 2018).

Despite these challenges, experts in L&D anticipate that organizations will adopt AI into their work because of the potential productivity boost it might provide.

Theme 2. About Comparing Instructional Design and Technical Writing

Competencies of a Technical Writer

According to the analysis of the job descriptions of an assistant technical writer and a senior technical writer by Carliner (2001) the most common expected skills were strong communication skills, attention of detail, ability to learn a complicated technical product and proficiency in Microsoft office suite applications. In terms of education, there was not much focus on any specialization, however a four-year degree in any field was still required (p. 163). Hart-Davidson

(2001) identified four kinds of value-added activities that technical communications perform, see figure 1.

Figure 1

Technical Communication Competencies. Figure used with permission of the author.

Symbolic-Analytic Competency	Corresponding Technical Communication Activity
Experimentation	Usability research that questions the ends and not merely the means of information and task-support delivery in an information product (Johnson-Eilola 1995, p. 258)
Collaboration	Working on distributed teams with an attention to the success of the collaborative practices used, and a commitment to improving them (p. 259)
Abstraction	Finding and articulating patterns, structures, and relationships in large amounts of information that is typically amassed but either unstructured or structured in ways that limit the use of the information (p. 260)
System Thinking	Finding and articulating patterns, structures, and relationships across specific problems, projects, and task domains; moving from tactical to strategic thinking that can impact large social structures such as the enterprise, the market, the community, the state (p. 261)

Hart-Davidson (2001) explains it further that while technical communicators increasingly use certain competencies, they are not seen as core to their role, and systems thinking is considered outside their scope. However, all four competencies involve improving work practices and are essential for developing successful IT products that enhance social relationships. Johnson-Eilola believes technical communicators are best suited to manage these strategies (pp. 150-151). Technical writers require a unique blend of skills to effectively communicate complex technical information to diverse audiences. They need strong writing, communication, and research abilities to gather information, understand technical jargon, and simplify it into clear, concise, and well-structured content. Proficiency with authoring tools, markup languages, and style guides, along with keen attention to detail, accuracy, and consistency, is essential. They must possess excellent organizational, problem-solving, editing, and proofreading skills. Adaptability, collaboration with cross-functional teams, and the ability to quickly learn new technologies are

crucial for success in this role (Fetcher, 2021).

Competencies of an Instructional Designer

Instructional designers bring together a variety of skills such as writing, communication skills, graphic design, authoring tools, and understanding of a systems design framework. Hence, I feel that they need to be a little more specialist in comparison to technical writers. Every decision and instructional designer take can affect the learnability of the intended learners and consequently the organizational goals. Hence identifying the competences often instructional design is a crucial aspect to ensure the business outcomes are met.

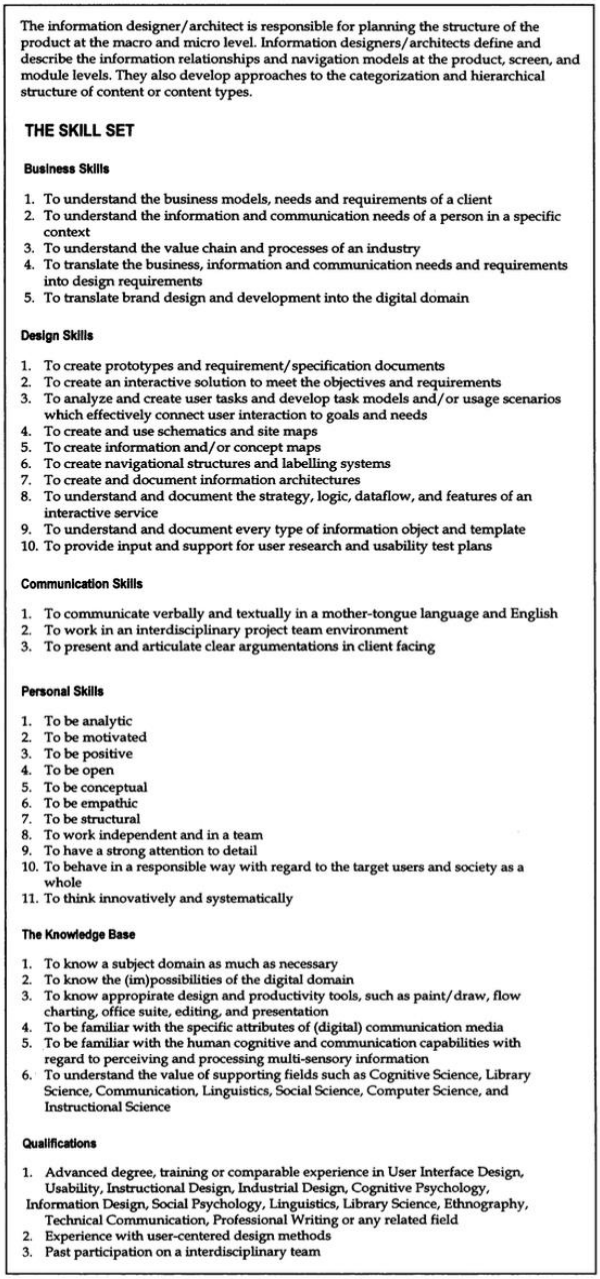
Wang (2021) identified that the *ability to develop course materials*, *ability to create effective instructional products* and *ability to advise and consult with Subject Matter Expert (SMEs)* were the top three required ability competencies (p 109).

Carliner (2001) elaborates on the skillset need for an information designer by dividing the skillset into business, design, communication and personal skills. He also focused on the importance of domain knowledge as an important tool for an ID. In terms of qualification, the job does require someone who has a degree in training or a comparable discipline. Figure 2 demonstrates a detailed job description of an instructional designer (p 162).

In her review of ID competencies, Lance (2022) identified that 60% of the studies described the need for instructional designers to be familiar with and apply instructional design theories and models. Other competencies included knowledge of learning theories, collaboration, communication, multimedia production, content development, evaluation and project management skills (p. 26).

Figure 2

Job Description of an Instructional Design Job. Figure used with permission of the author.



The information designer/architect is responsible for planning the structure of the product at the macro and micro level. Information designers/architects define and describe the information relationships and navigation models at the product, screen, and module levels. They also develop approaches to the categorization and hierarchical structure of content or content types.

THE SKILL SET

Business Skills

1. To understand the business models, needs and requirements of a client
2. To understand the information and communication needs of a person in a specific context
3. To understand the value chain and processes of an industry
4. To translate the business, information and communication needs and requirements into design requirements
5. To translate brand design and development into the digital domain

Design Skills

1. To create prototypes and requirement/specification documents
2. To create an interactive solution to meet the objectives and requirements
3. To analyze and create user tasks and develop task models and/or usage scenarios which effectively connect user interaction to goals and needs
4. To create and use schematics and site maps
5. To create information and/or concept maps
6. To create navigational structures and labelling systems
7. To create and document information architectures
8. To understand and document the strategy, logic, dataflow, and features of an interactive service
9. To understand and document every type of information object and template
10. To provide input and support for user research and usability test plans

Communication Skills

1. To communicate verbally and textually in a mother-tongue language and English
2. To work in an interdisciplinary project team environment
3. To present and articulate clear argumentations in client facing

Personal Skills

1. To be analytic
2. To be motivated
3. To be positive
4. To be open
5. To be conceptual
6. To be empathic
7. To be structural
8. To work independent and in a team
9. To have a strong attention to detail
10. To behave in a responsible way with regard to the target users and society as a whole
11. To think innovatively and systematically

The Knowledge Base

1. To know a subject domain as much as necessary
2. To know the (im)possibilities of the digital domain
3. To know appropirate design and productivity tools, such as paint/draw, flow charting, office suite, editing, and presentation
4. To be familiar with the specific attributes of (digital) communication media
5. To be familiar with the human cognitive and communication capabilities with regard to perceiving and processing multi-sensory information
6. To understand the value of supporting fields such as Cognitive Science, Library Science, Communication, Linguistics, Social Science, Computer Science, and Instructional Science

Qualifications

1. Advanced degree, training or comparable experience in User Interface Design, Usability, Instructional Design, Industrial Design, Cognitive Psychology, Information Design, Social Psychology, Linguistics, Library Science, Ethnography, Technical Communication, Professional Writing or any related field
2. Experience with user-centered design methods
3. Past participation on a interdisciplinary team

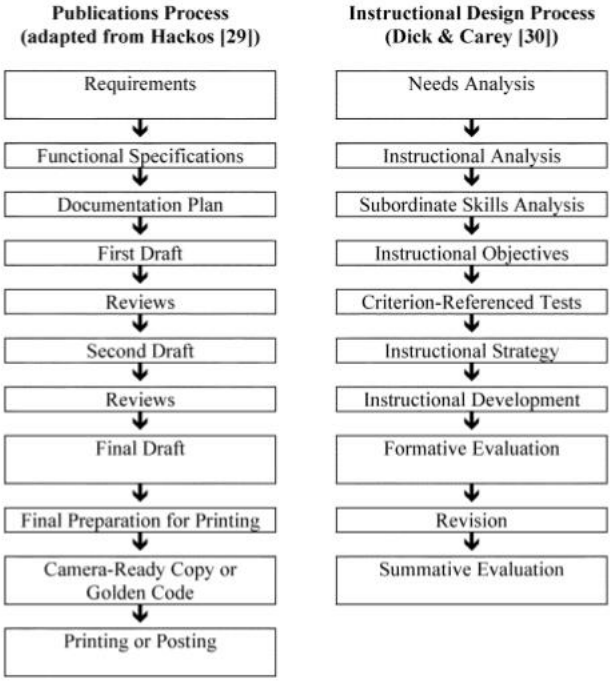
Based on the literature, I conclude that the most important skills and competencies for an ID are system designs approach, communication skills, and development. In terms of hard skills, having the knowledge of tools for interactive content development is also recognized as a key skill for an ID by the experts.

Different Approaches to Similar Challenges: Can They Replace Each Other?

It is evident that some of the skills do overlap between instructional design and technical writing, such as writing skills, communication with SMEs, knowledge of the product and to some extent using a systems design approach as you ideally need some planning and research to start with and need a review after development. However, it is clear as day that both professions have different work settings and competencies, that will be discussed in this section.

Figure 3

Comparison Of Museum Exhibits Design, Publications, And ISD Processes. *Figure used with permission of the author.*



Contrasting the *Work Processes* of Technical Communicators and Trainers, Carliner (2012) explains (see figure 3.) that technical communicators frequently take a leading role in the creation and development of their documents, sometimes managing the entire process alone. On the other hand, trainers typically share the responsibilities for designing, developing, and

delivering training programs with the support of instructors and administrators (p.165).

Carliner (2011) differentiates between the two on *the purposes of their primary outputs.*

- Technical writers create content to be referenced as needed, aiding users in performing tasks without requiring them to retain the information long-term. For example, a user setting document margins may refer to an online help index for instructions and might re-consult it if needed in the future.
- In contrast, trainers design programs to develop skills that learners must retain and apply independently. A training program on setting margins would include tutorials, demonstrations, practice opportunities, and a test to ensure learners can perform the task without further assistance.
- Thus, technical communicators in training roles must also create exercises and assessments to verify skill mastery. Consequently, as the end user's requirements are different, the language and tone of the content development also differs (pp. 166-168).

It is evident there are barriers to entry between the two professions, even though not visible to the naked eye.

Theme 3. About Leveraging Evaluation to Improve Learner Engagement and Performance

The Katzell-Kirkpatrick model of evaluation impressed me right from the start of my educational technology program. A I started the internship, I decided to dive deeper into the subject by reading a few articles and watching some of the webinars that were delivered by and the Kirkpatrick's themselves. I really loved the reverse engineering approach in the new age Kirkpatrick model and tried to look for opportunities to implement the methodology at Coveo.

Implementing Katzell-Kirkpatrick's Model of Evaluation

The Katzell-Kirkpatrick Model is The Standard for Leveraging and Validating Talent Investments. As per The Katzell-Kirkpatrick model (2021), it is implemented in four levels:

- Level 1, reaction: which measures how favorable, engaging, and relevant participants find the training to their jobs.
- Level 2, learning: which assesses the acquisition of knowledge, skills, attitude, confidence, and commitment resulting from the training.
- Level 3, behavior: which evaluates the extent to which participants apply their learned skills on the job.
- Level 4, results: which examines the achievement of targeted outcomes because of the training and its accompanying support and accountability measures.

In the article on implementing Terttiaavini (n.d.), at level 1, the study found that learners were satisfied with the training. The level 2 evaluation demonstrated the increase in learners' knowledge of the subject (p. 241). The study did talk about level 3 evaluation, but I did not find any clear explanation of how it was done and what was the outcome of that. This brings me to the challenge that the implementation of Katzell-Kirkpatrick model faces while implementing level 3 and level 4 evaluations.

Kennedy (2013) while referring to the 2009 survey by ASTD said that 91.6 per cent and 80.8 per cent of the organizations say they gather data about reactions and learning (Level 1 and Level 2), respectively, whereas 54.6 per cent and 36.9 per cent of them say they evaluate behavior and results (Level 3 and Level 4), respectively. However, when asked, "how much of your training portfolio is evaluated", Arthur (2003) explains that the numbers are 78% for Level 1, 39% for Level 2, 8% for Level 3 and 4 or 5 % for Level 4. So the number's look high(even though still

alarming) when we say if the information is collected, but when talking about training evaluation, the numbers are very low.

Concluding further about the reasons, Kennedy (2013) cited two primary reasons:

- Training professionals identified insufficient resources, such as time and staff, along with a lack of managerial support, as primary reasons for not performing Level 3 and Level 4 evaluations.
- Both kinds of evaluations necessitate a significant investment of time and strong cooperation from management across various levels to gather precise evaluative data.
- The third main reason seems to be a lack of knowledge about evaluation, especially about level 3 and 4, highlighting the need for greater education on evaluation and its methods.

Theme 4. About Project Management Skills for Instructional Designers

Project management skills go hand in hand with instructional design. To deliver a task in required amount of time and budget, a project manager's estimation skills play a huge role.

What is Project Management?

"Project management can be defined as the practice to enforce particular processes or concepts to implement, organize and implement new strategies or improvements within an organization" (Jain, 2021, p. 700). Project management as a discipline is vital for any type of organization, and hence the tasks carried out by project managers also vary based on the scenario. It relies on four key factors as per Jain (2021), viz., time (the scheduled duration of work); costs (the budget allocated for the project); scale (the changes or adaptations incorporated into the project); and performance (the quality of the project's outcome) (p. 700). Pan (2012) solidifies this further as, "Scope, time, and money are called the triple constraints of a project (William van Rooij, 2010) and represent the challenges faced by project managers in determining how to complete the

project to its agreed specifications" (p. 6).

Coming to the expertise of Project managers, Pan (2021) quotes the Computing Technology Industry Association (2008) that identifies five key areas of expertise for project managers. These include Pre Project-Setup/Initiating, Project Planning, Project Execution and Delivery, Change, Control, and Communication, and Project Closure (p. 6). "Taking a comprehensive perspective, Brill, Bishop, and Walker (2006) describe an effective project manager as a professional who possesses skills in leadership, problem solving, and communications; context knowledge; and people expertise" (Pan, 2012, p.6).

Studies have found a positive correlation between the size of the organization and the maturity of its project management processes. In a survey conducted by Van (2011) on the commitment to project management in organizations developing training or learning programs, it was found that organizations with 500 or more employees generally report a higher level of project management implementation maturity compared to those with fewer than 500 employees. This suggests that medium to large-sized organizations is more committed to project management. Additionally, the study revealed that institutions of higher education implement project management practices at a medium or high maturity level (p. 149).

Van (2011) further claims that the top management for a training department will prefer a graduate in instructional design to fill up the position of a project manager rather than project manager as a credential, as they believe that project management competencies can be acquired by managing instructional design projects (p.153). Since we are talking about the competencies of project managers in respect to IDs, lets dive into the topic in detail.

Project Management Competencies for Instructional Designers

Instructional Systems Design and project management are two disciples, but they are interrelated

according to Van (2010):

> Project management complements the instructional design process by offering a set of repeatable processes with which to describe, organize and complete the work required for each phase of the project life cycle, with deliverable complexity also determining how much process is used at each phase (p. 855).

As per a outcomes survey by Van (2010), project managers spend 47% of their time doing instructional design, while only 15% of their time goes into actual project management (p. 860) . In Cox's book on project management skills of IDs, ADDIE and project management are united in a "four-step combo".

Cox (2009) collapses the five project process groups of project management and the five phases of ADDIE, each into a set of four steps, which she then matches. The initial process group aligns with the analysis phase, the planning group corresponds to the design phase, the combined executing and monitoring and controlling groups are akin to the combined development and implementation phases, and the closing group corresponds to the evaluation phase (p .11).

In instructional design projects, professionals are required to exhibit a range of key competencies for effective project management. Allen (2021) identified these six competencies including, practicing ethical behavior; keeping projects and teams organized; remaining flexible and adaptable to change; demonstrating effective communication; ensuring tasks are completed for each phase of the project; and conveying ideas clearly and concisely in various forms of communication (pp. 10-12). As per Pan (2012), "Project management methodologies with a strong point in efficiency (e.g., by planning and scheduling) can complement ISD's effectiveness in the design of instruction (Morrison, Ross, & Kemp, 2001)" (p. 11). As each method possesses advantages and disadvantages, their integration can generate synergy, enhancing the outcomes of

the instructional design project (p .11).

Based on the findings of these studies, I think project management and instructional design competencies are complementary. With better project management, i.e. through better estimation of scope, time and money, IDs can deliver better training programs, both in corporate and higher education.

Theme 5. About Storyboarding Best Practices

Storyboarding as a practice originated in film, is widely used in web and multimedia development projects and, more recently, adopted by instructional designers to work out the details of programs before they are produced using authoring tools and other multimedia programs. Specifically, storyboards are a guide for online course which will include information about components that can be animation, sound, picture, text, graphic and interaction etc (Okur, 2010).

Taking about templates, Okur (2010) explains that most organizations use storyboarding templates, which are pre-designed layouts or formats that serve as a starting point for creating documents, presentations, websites, or other materials, providing a structure for content placement and design elements. Some use standardized templates, which are predefined formats or layouts that serves as a consistent and universally accepted starting point for creating various types of documents or materials. The advantage of doing so is to ensure consistent, efficient, and branded document creation while facilitating compliance and ease of use.

Other organizations create their own templates. The advantage of doing so is that it allows instructional designers to tailor the format to their project needs, ensuring consistency and efficiency in organizing content and elements (Keating, 2013). Regardless of the type of storyboards used, they offer several benefits, each of which I describe in the rest of this section.

Benefit 1. See the Design Through the Learner's Eye

Parrish (2006) believes that one of the most important skills an instructional designer can have "is the ability to step outside one's own perspective and see the design through the learner's eyes" (p. 72). He calls this 'learner empathy' (Parrish, 2006) and involves grasping the learner's experience, including text interpretation, software navigation, image comprehension, engagement factors, and learning outcomes. This differs from learner analysis, is a process for collecting data about the targeted learners, not the skill of empathizing with them.

Jantke (2005) suggests that such empathy can be applied through storyboarding because the storyboards describe in detail how e-learning content will be presented to learners and, taking the perspective of learners, instructional designers can consider how learners might respond to that content and its presentation. Jantke (2005) calls this approach didactic design and defines it as the intentional planning and organization of educational content and activities to facilitate effective learning experiences for learners. Jantke (2005) adds that the storyboard is an important tool for this, because it visually represents the sequence of events, interactions, and multimedia elements and helps designers visualize the learning journey, so they can make informed decisions about instructional strategies and media integration.

Kiating (2013) mentions that storyboarding occurs at the design phase of a project and is a particularly helpful practice:

- With large and complex projects
- When working with a large team to focus on the same goal or with several teams (such as when outsourcing a project to another organization)
- When a course involves a variety of media

Parrish (2006) notes that these "Written stories have the advantage of becoming a document for

creating shared vision within the design team ... and for better communicating the rationale and value of a design to clients" (p.75).

Storyboarding Best Practices for Instructional Designers

Several storyboard formats exist, and each has their purpose. The right storyboard for a particular situation depends on the complexity of a project, the types of media used, and the format of delivery of the training.

In terms of storyboard tools, Keating (2013) notes that Microsoft Word and Microsoft Excel are the most used tools for creating storyboards, adding that Microsoft PowerPoint is not used much can be useful in presenting different types of information on a single slide or represent interactions. Adobe Captivate and Articulate Rise can be good storyboarding tools when SMEs need to get a feeling of how the resulting program will look .

But some practices can be adopted regardless of the format. For example, Keating (2013) provides a sample format for a general storyboard that consists of:

- Top banner, which is the title area, and identifies information section.
- Visual content frame, which is the main area for text, graphics, animations, and navigational instructions.
- Audio content frame, which is the section detailing auditory elements and scripts.
- User interaction notes, which are the descriptions for additional elements and instructions.
- Miscellaneous notes, which are the additional details and comments for various aspects.

Issues and Limitations of Storyboarding

Keating (2013) suggests situations where storyboarding may not be advisable. For instance, in cases of small and straightforward projects, a discussion with an e-learning consultant or contractor might suffice, eliminating the need for detailed storyboards. Similarly, if the project

team consists of only one or two individuals handling design, scripting, and building, adding storyboarding to the process could be excessive. Additionally, if the project concept is still unclear, investing time in storyboarding multiple versions can be unproductive.

Okur (2010) highlighted some of the key issues in storyboarding:

- Content issues: Authors and web developers face challenges in adapting content from traditional formats to suit online learning. Authors need to identify the differences between face-to-face and online learning, and format content for web publication. This may involve summarizing content, removing unnecessary text, and creating activities tailored for online learning.
- Time constraints: Some courses require more time for preparing storyboards due to the nature of the content. For example, complex interactions and simulations both require extensive storyboarding work because of the number and complexity of the interactions involved. Delays in content creation or disagreements between authors and web developers can prolong the storyboarding process, impacting overall production timelines.
- Communication gaps: Effective communication between authors and web developers is crucial for successful storyboarding. A lack of clarity about content formats, scenarios, and production timelines in the storyboard can lead to misunderstandings about how media components should be produced and complicate the storyboarding process. Detailed meetings, clear agreements, sharing of online course samples, and clear instructions in the storyboard can help bridge these communication gaps.
- Control and management issues: Authors may request changes to approved storyboards, leading to revisions or the need to create new storyboards unless the organization has a well-defined change management process.

Okur provides suggestions to address these challenges through improved collaboration, clear communication, and a shared understanding between authors and web developers. Training programs, detailed production plans, and organizational learning activities can help enhance the efficiency and effectiveness of the storyboarding process in online course development (p. 4716).

CHAPTER 3: ABOUT THE INTERNSHIP PROJECT

The primary project of my internship involved creating three training courses that introduce machine learning models to Coveo employees in roles such as business development executives, sales engineers, customer success managers, account executives, professional services specialists, and technical support specialists—collectively referred to as the commercial teams at Coveo. These teams directly interact with both current and prospective Coveo clients, making their tasks crucial for the organization's revenue generation.

The business requirement for these courses originated from Coveo's leadership, who identified a gap in the conceptual understanding of key concepts like artificial intelligence (AI) and machine learning (ML) among the front-line employees (who interact directly with customers). Despite Coveo's decade-long implementation of these technologies, broader awareness only surged when ChatGPT popularized AI. As prospective clients became more knowledgeable, it was essential for front-line teams to not only recognize these technologies but also explain their functionality from Coveo's perspective.

Given the project's scope, we divided the training into several short courses. The first course, titled "Introduction to Artificial Intelligence and Machine Learning at Coveo", aimed to familiarize learners with basic concepts such as vector mapping (a mathematical representation of data in multidimensional space) and large language models (which are systems trained on extensive text datasets to understand and generate human-like text). The subsequent twelve courses were focused on Coveo's twelve machine learning models, offering in-depth insights into how these models enhance customer experience. These twelve courses were later consolidated into three based on organizational categories, which I will

discuss in the next section.

Coveo already had extensive resources on its machine learning models, including courses, technical documentation, and support articles, primarily aimed at an external audience. My initial task was to research the existing materials, draw inspiration for the new course, and adapt the content for an internal audience. For some machine learning models, where no content existed, we had to develop material from scratch. After I designed the initial framework and detailed outline, I developed three out of the twelve courses, the rest of the nine courses were developed by four other instructional designers in the education services team.

This chapter describes my internship project at Coveo. Specifically, it describes the courses and skillpaths (curated sequences of educational content designed to impart specific competencies or mastery over a subject area) I developed, and the challenges and accomplishments that I experienced when working on the project. I have also explained the milestone that I achieved during the production the course. The following section describes the courses and details the specific modules I worked on.

ABOUT THE COURSES

The purpose of the online courses is to provide Coveo employees, including business development executives, sales engineers, customer success managers, account executives, professional services specialists, and technical support specialists, with a foundational awareness of Artificial Intelligence (AI) and Machine Learning (ML) models. The courses also cover the operations of the ML models most used at Coveo.

I assisted primarily in the design and developing storyboard decks of twelve machine learning

courses, except for the introductory course. These individual courses were later merged into three main courses by the manager, based on the categories defined by the organization. The four courses that were delivered after merging the individual machine learning models were as follows:

- Introduction to Artificial intelligence and Machine Learning at Coveo
- Coveo Core Machine Learning Models
- Coveo Service and Knowledge Machine Learning models
- Coveo Commerce Machine Learning Models

When viewed in sequence, these four courses build mastery over the concept of machine learning. Together, they form a skill path titled "Artificial Intelligence and Machine Learning at Coveo."

About the Course, Introduction to Coveo Machine Learning Models

This course, designed to be the first in the series, provides learners with the conceptual foundations of Artificial Intelligence and Machine Learning models, highlighting the relationship between the two. It also introduces key terminology used in these fields, with a focus on Machine Learning.

The main objectives of the course were:

- Identify the differences between Artificial Intelligence (AI) and Machine Learning (ML).
- Explain the capabilities of AI and ML at Coveo.
- Provide an overview of various machine learning models at Coveo and categorize them based on their capabilities.
- Describe, at a high level, the interaction between machine learning models and Coveo systems.

This course was designed, developed and delivered by my supervisor, Christine, hence I do not have the precise details other than the length of the course which was about 4 hours.

About the Course, Core Machine Learning Models

This second course explores the six core Machine Learning models used at Coveo. These are called core models because they provide the functional capabilities that are beneficial for all categories of businesses that Coveo support. The six models are:

- Relevance Generative Answering, which like a large language model creates human-like answers to user questions by analyzing and synthesizing information from the organization's internal sources.
- Semantic Encoder, which translates words and phrases into numerical representations to understand and match the underlying meaning of text.
- Automatic Relevance Tuning, which automatically adjusts search result rankings based on user interactions to show the most helpful content first.
- Query Suggestions, which predicts and displays possible search terms as users' type, helping them find information more quickly.
- Content Recommendations, which analyzes user behavior to suggest additional articles, documents, or pages that might interest them.
- Dynamic Navigation Experience, which extracts and displays the most relevant sentences or paragraphs from search results to quickly answer user queries.

The main objectives for the course were:

- Explain the six core Machine Learning models in action.

- Discuss their primary purposes of each model.
- Demonstrate the benefits and real-world use cases for each model.
- Summarize best practices in implementing these models to enhance customer experience.

Each of the six courses had these four modules (24 modules in total):

- What is the model, which provided an introduction of the model, its capabilities, and the key benefits of the model. and lasts approximately ten minutes.
- Where can this model be used, which discusses the scenarios and use cases where the model adds value and lasts approximately twenty minutes.
- How does the model learn, which explains the working of the model inside the Coveo's product and lasts approximately twenty minutes.
- Best practices, which identifies the strategies that can lead to successful implementation and lasts approximately ten minutes.

The primary instructional strategy used to teach in this course was mastery learning. We used a structured approach of breaking down the content into clear learning objectives and presenting the information in a logical sequence. The course aims to ensure learners understand the fundamentals of how Coveo Machine Learning models work, recognize the commonly used models, and apply best practices for configuring and testing them. This step-by-step approach aligned with mastery learning, where learners must demonstrate proficiency in one concept before moving to the next. Figure 4 demonstrates the learning outcomes slide.

Each module began by introducing the content through text and visuals, continued with content presentations that included video walkthroughs, and concluded with a summary. Figure 5 demonstrates the introduction of a concept in module 1.

Figure 4

Learning objectives slide for the courses

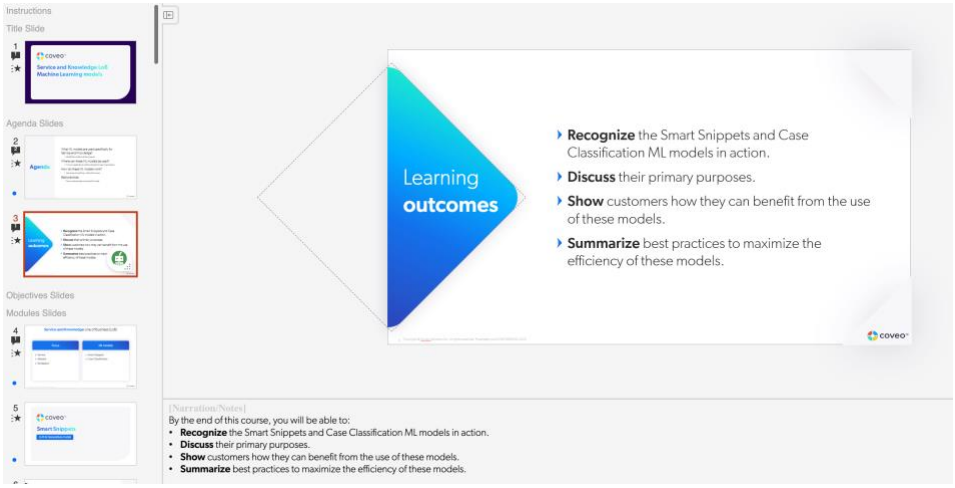


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Figure 5

Example of an introduction screen with content building the narrative

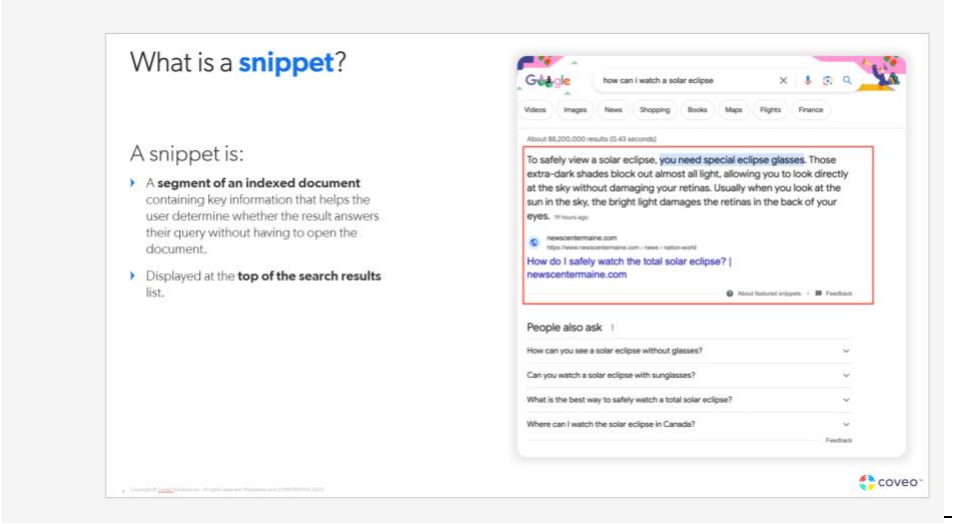

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Figure 6

Example of a summary screen

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Overall, the course was intended to take 60 minutes for each model. I was working on two of these six courses, so I developed instructions that were intended to take 120 minutes of total online learning. Since there are in total six machine learning model courses, the total time to complete the entire course was 360 hours.

My contribution to the project was developing the design plan for all of the six courses. About storyboards, I created two of the six courses: the ones on Automatic Relevance Tuning and Content Recommendations.

About the Course, Coveo Service and Knowledge Machine Learning Models

This course, intended to be taken third, explores Machine Learning models used for clients in service and knowledge industries. The two models covered by this course include:

- Smart snippets, which extracts and displays the most relevant sentences or paragraphs from search results to quickly answer user queries.

- Case assist, which provides customer service representatives with AI-powered suggestions for solving customer issues efficiently.

Both of the courses had these four modules each (eight modules in total):

- What is the model, which provided an introduction of the model, its capabilities, and the key benefits of the model. and lasts approximately ten minutes.
- Where can this model be used, which discusses the scenarios and use cases where the model adds value and lasts approximately twenty minutes.
- How does the model learn, which explains the working of the model inside the Coveo's product and lasts approximately twenty minutes.
- Best practices, which identifies the strategies that can lead to successful implementation and lasts approximately ten minutes.

The primary instructional strategy used to teach in this course was mastery learning. We used a structured approach of breaking down the content into clear learning objectives and presenting the information in a logical sequence. The course aims to ensure learners understand the fundamentals of how Coveo Machine Learning models work, recognize the commonly used models, and apply best practices for configuring and testing them. This step-by-step approach aligned with mastery learning, where learners must demonstrate proficiency in one concept

before moving to the next.

Each module began by introducing the content through text and visuals, continued with content presentations that included some video walkthroughs, and concluded with a summary, followed by a quiz.

Overall, the course was intended to take 60 minutes for each model. I was working on one of them, so I developed instructions that were intended to take 60 minutes of total online learning. Since there are in total two machine learning model courses, the total time to complete the entire course was 120 hours.

My contribution to the project was developing the design plan for both courses. About storyboards, I created one of the two decks: the one on Smart Snippets.

About the Course, Commerce Machine Learning Models

This course, intended to be taken fourth, explores Machine Learning models used by commerce/e-commerce organizations. The four models covered by this course include:

- Product recommendations , which analyzes shopping patterns to suggest products that customers are likely to be interested in purchasing.
- Predictive Query Suggestion, which uses advanced algorithms to predict and offer search terms that users are likely to type next.
- Intent aware product recommendation, which recommends products that align with the user's current goals or intentions, based on their browsing behavior.
- Session based product recommendation, which suggests products based on the user's actions within their current shopping session, not just their long-term history.

Each of the four courses had these four modules (sixteen modules in total):

- What is the model, which provided an introduction of the model, its capabilities, and the key benefits of the model. and lasts approximately ten minutes.
- Where can this model be used, which discusses the scenarios and use cases where the model adds value and lasts approximately twenty minutes.
- How does the model learn, which explains the working of the model inside the Coveo's product and lasts approximately twenty minutes.
- Best practices, which identifies the strategies that can lead to successful implementation and lasts approximately ten minutes.

The primary instructional strategy used to teach in this course was mastery learning. We used a structured approach of breaking down the content into clear learning objectives and presenting the information in a logical sequence. The course aims to ensure learners understand the fundamentals of how Coveo Machine Learning models work, recognize the commonly used models, and apply best practices for configuring and testing them. This step-by-step approach aligned with mastery learning, where learners must demonstrate proficiency in one concept before moving to the next.

Each module began by introducing the content through text and visuals, continued with content presentations that included some video walkthroughs, and concluded with a summary, followed by a quiz.

Overall, the course was intended to take 60 minutes for each model. Since there are in total 4 machine learning model courses, the total time to complete the entire course was 240 hours.

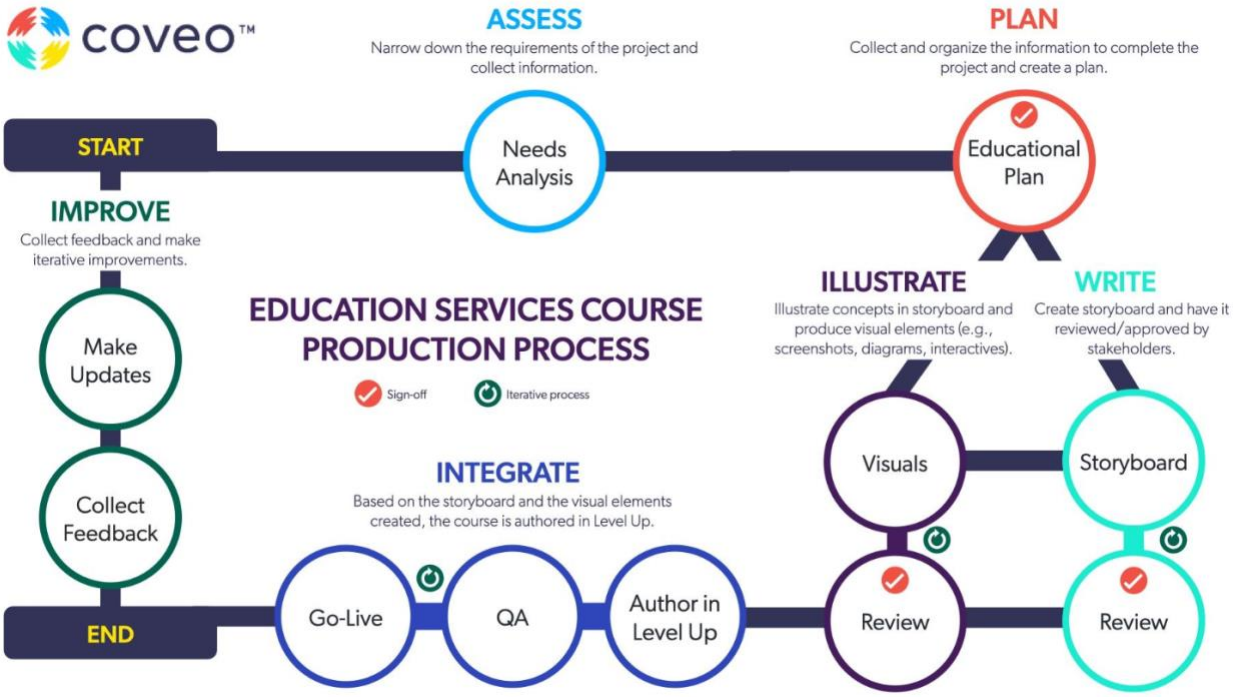
My contribution to the course was creating the design plan for the four courses. The storyboards were created by other instructional designers.

PROCESS FOR PRODUCING THE COURSES

The course production process used by the education team followed the ADDIE instructional design model that stands for analysis, design, development, implementation, evaluation. Figure 7 illustrates the different stages and steps involved in Coveo's ADDIE-inspired process.

Figure 7

Course Production Process of the Education Services Team at Coveo



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It should be noted that this process was originally followed for the courses that were developed for external audiences. The education team manager was keen to create a new course production process for the courses meant for internal audiences. It was decided that the new process will be inspired by Successive Approximation Model (**SAM)** instructional design model (Iterative

refinement approach for rapid learning design and development). This, however, was work in progress at the time of my internship. For the current project, I followed the ADDIE inspired course production process.

About My Role in Producing the Courses

In my role as an instructional designer, I developed self-study e-learning courses on Coveo's machine learning models for non-technical roles such as sales engineers, business development, customer success, and marketing specialists. Unlike previous courses tailored for the external audiences (customers and partners) that offered deep technical insights, these new courses emphasized conceptual understanding of machine learning products.

Despite the less technical nature of the new courses, I needed to have a deep technical understanding of the ML models to design content effectively and answer potential learner questions. This presented a steep learning curve, which I took as an opportunity to deepen my knowledge in this field.

This section describes how I produced these courses. Because they followed identical processes with identical milestones, I describe the production of the courses together. The four key milestones include:

1. Needs analysis
2. Design Plans
3. Producing storyboards
4. Publish course online

Milestone 1. Needs Analysis

The needs analysis for these courses was somewhat unconventional because many key decisions were predetermined by the leadership and commercial enablement team at Coveo. Typically, a

needs analysis involves identifying business goals, understanding learner profiles, and defining course content. However, in this case, these aspects were largely pre-defined.

Looking back at what is usually covered in a needs analysis, I will draw the parallels with how those steps were carried out at Coveo:

1. Background of the Project: The commercial team had identified the need for introductory courses on AI and ML, specifically tailored to help commercial teams better explain products and respond to client inquiries. My role primarily involved researching and gathering relevant content to address this need.
2. Report the needs assessment
    a. Request and Business Need: The enablement team requested educational courses to help commercial teams understand and explain AI and ML concepts, ultimately aimed at improving sales performance and generating revenue.
    b. Performance gap: Education team was not involved in capturing the current performance levels and the expected performance levels after the training. I was also not aware of what tasks do the learners need to perform.
    c. Describe the learners: The sponsor clarified the learners, who were the members of the commercial teams. We were told the technical competency level of each of the teams. For example, professional services and technical support teams were highly technical, while business development team was the least technical. However, we were not provided with the persona of the learners in terms of weather they were high, medium, or low maintenance. Another observation that was provided to us was that these teams were not accustomed to the in-house LMS, which was usually used to host trainings for customers and partners. I think

this might be the reason that PowerPoint was chosen as the authoring tool, however it was not a decision that I took.

d. Product and project constraints: The editorial guidelines, preferred authoring tool and templates were not provided to us, and I did not assess these needs. These decisions were taken by the media production specialists in the team.

   In terms of project constraints, the must-meet deadline was set to April 30, 2024. I was not involved in the decisions on the budget and must-include staff.

3. Requirements

   a. Business objective: While I did not set or analyze the business objective, as stated earlier, it was to generate revenue.

   b. Learning objectives: I discussed these during my initial meeting with the SMEs. Based on the details I gathered, I established the learning objectives as part of the design outline (which is the second milestone). I used Bloom's action verbs and created specific, observable and measurable objectives. These objectives did not mention any level of acceptable performance though.

   c. Evaluation: I created a set of quiz questions for all three courses for level two evaluation. Level one evaluation is usually done at Coveo through the LMS, but as these courses were in form of powerpoint decks, I was not aware of how it will be carried out.

I did not create a needs analysis report and most of the work I did as part of the needs analysis was content research. This work lasted approximately two weeks. This section describes my work towards this milestone.

About My Work

My work on the needs analysis began with a meeting with the team manager, when she assigned me to the project. In parallel with the research, I had communication with the SMEs and my team's manager who explained the target audience to me and clarified the deliverables. I was provided with the following information about the course:

- The entire project would be delivered in two phases:
    - In the first phase, that I worked in, the training was to be developed only for the internal audience of Coveo. This gave us the flexibility to use the use cases from real clients, rather than simulation that is usually done in customer training by Coveo.
    - In the second phase, training will be developed for external audience, who were the customers and partners of Coveo. The expectation was to update the courses that already exist and create new courses on some machine learning models. The second phase did not start at the time writing this report.
- The suggested format and medium of the course were self-study, online.
- Although we are not given the number of learners, we were told the team names of our target audience that consisted of members from business development executives, sales engineers, customer success managers, account executives, professional services specialists, and technical support specialists' teams. I was also informed about different technical abilities for these teams.

- The length of the course was not decided during needs analysis and the details of phase two were also not provided.

Based on the information, I performed the needs analysis for phase one of the project to analyze the relevant material that already existed within Coveo and determined the additional material that would be needed to be developed. To accomplish this, I did the following:

1. I started with analyzing the existing training courses on smart snippets machine learning model. The first course, "How smart snippets learn and predict" provided conceptual knowledge of the subject. The second course, "Preparing Data to Build a Smart Snippets Model" helped me learn the architecture of the Coveo system, i.e., how information travels within the Coveo framework. The third course, "Creating and Testing a Smart Snippets Model", provided a hands-on experience of creating a smart snippet model. I found some of the information at front-end had changed, however , it did not impact my research as the focus of my research was to understand the concept. Also, the course we were supposed to create in first phase was conceptual, so the outdated parts did not have an impact.

2. My previous internship in technical writing helped me navigate through the training and the platform faster because I knew the system better. As Coveo invested in the foundational knowledge of the product in my first internship, I did not need to go through some of the initial steps. However, I was not working in a project related to machine learning at that time, hence, the information I learnt was completely new to me.

3. In the same manner, I looked at all the existing courses for consistency and accuracy. I went through the introductory courses and the hands-on courses and took the notes wherever the discrepancies were. Most of this information was however not so useful for first phase of the

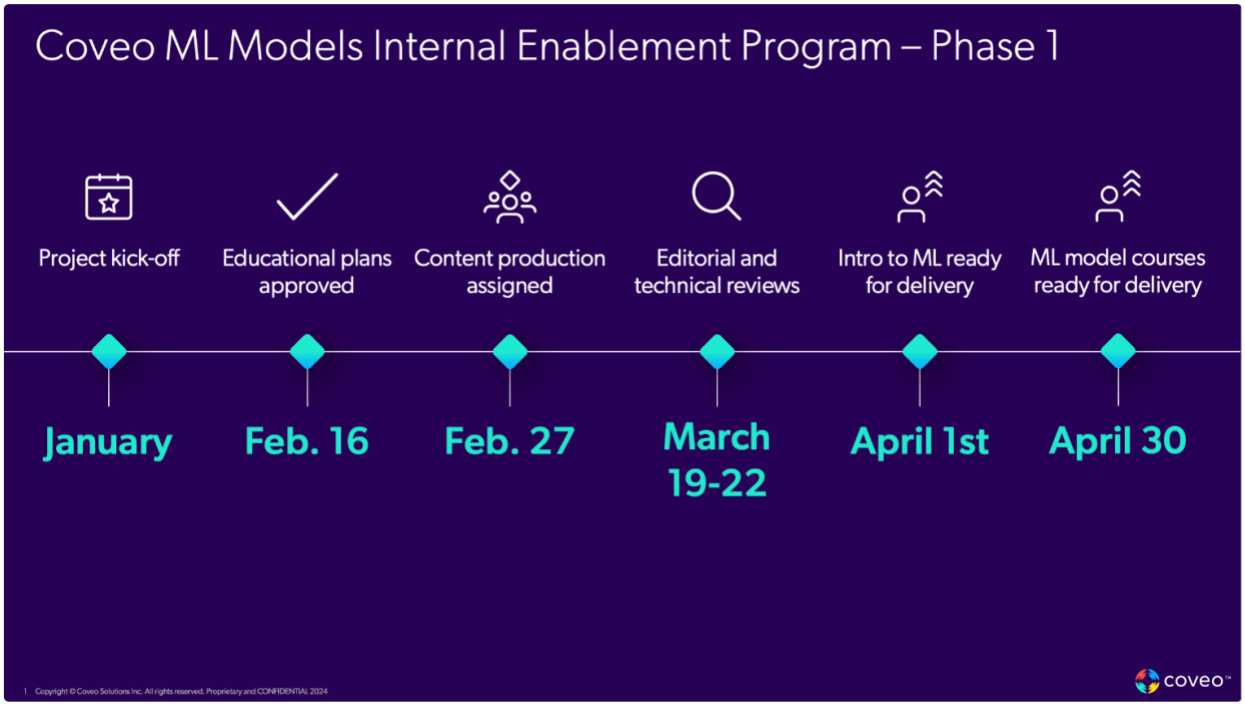
project which I was involved with. Whatever information was outdated or courses that were missing would be added in the second phase of training in future.

4. I also analyzed Coveo's technical documentation, since training courses did not exist for all machine learning models. I also looked at support knowledge bank articles and product discussions to identify real world use cases of the machine learning models.

5. I assisted the team manager estimate the resources needed to create the training materials. The project deadline was initially set for March 31, 2024. However, later it was decided that only the first course, Introduction to AI and ML, needed to be delivered on that date. The other twelve courses on individual models were to be delivered by April 30, 2024, which was a fixed deadline.

Figure 8

Estimates for delivery of online courses



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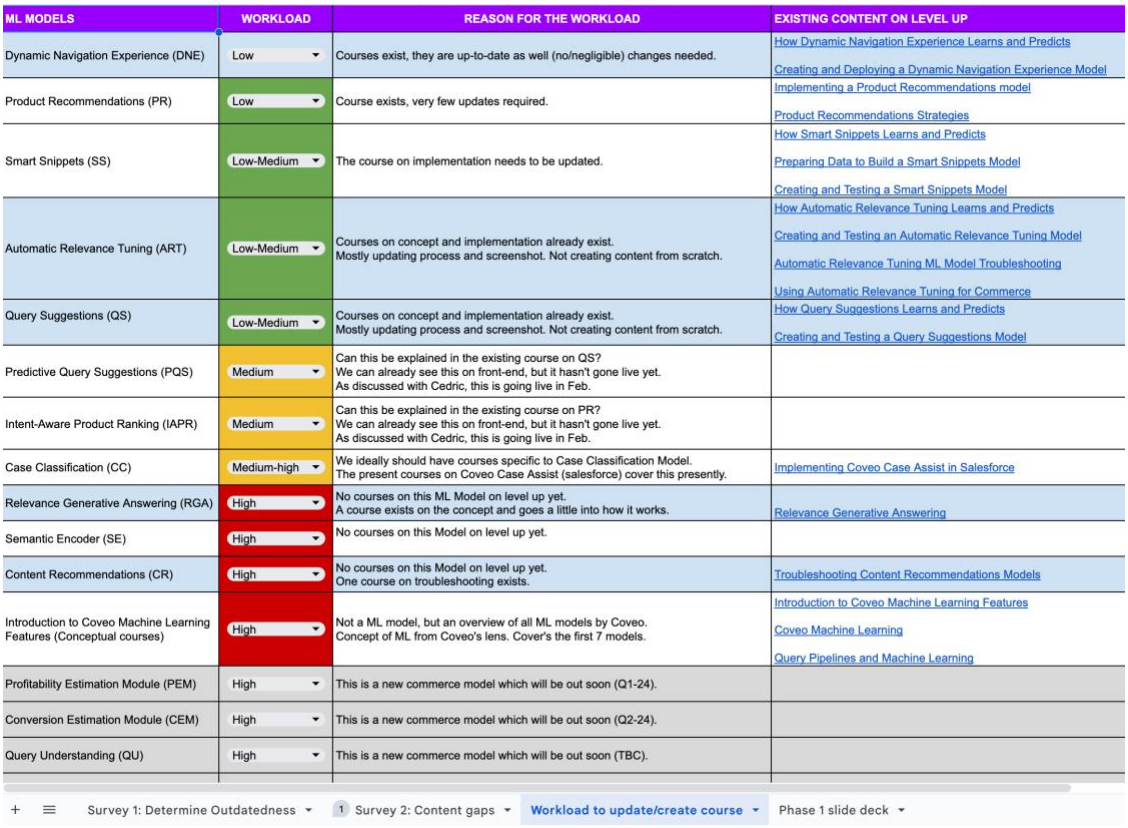
6. Since I did not know the total number of hours this training will entail, I was not able to use any formulas to make any estimates. Instead, we divided the twelve storyboards among five instructional designers and broke down the deliverable in the form of milestones and provided deadlines to those estimates. There were no budgetary constraints that were communicated to me. Figure 8 shows the intermediate deadlines created by my manager with my assistance.

Figure 9

Tracking sheet to estimate the effort



ML MODELS	WORKLOAD	REASON FOR THE WORKLOAD	EXISTING CONTENT ON LEVEL UP
Dynamic Navigation Experience (DNE)	Low	Courses exist, they are up-to-date as well (no/negligible) changes needed.	How Dynamic Navigation Experience Learns and Predicts Creating and Deploying a Dynamic Navigation Experience Model
Product Recommendations (PR)	Low	Course exists, very few updates required.	Implementing a Product Recommendations model Product Recommendations Strategies
Smart Snippets (SS)	Low-Medium	The course on implementation needs to be updated.	How Smart Snippets Learns and Predicts Preparing Data to Build a Smart Snippets Model Creating and Testing a Smart Snippets Model
Automatic Relevance Tuning (ART)	Low-Medium	Courses on concept and implementation already exist. Mostly updating process and screenshot. Not creating content from scratch.	How Automatic Relevance Tuning Learns and Predicts Creating and Testing an Automatic Relevance Tuning Model Automatic Relevance Tuning ML Model Troubleshooting Using Automatic Relevance Tuning for Commerce
Query Suggestions (QS)	Low-Medium	Courses on concept and implementation already exist. Mostly updating process and screenshot. Not creating content from scratch.	How Query Suggestions Learns and Predicts Creating and Testing a Query Suggestions Model
Predictive Query Suggestions (PQS)	Medium	Can this be explained in the existing course on QS? We can already see this on front-end, but it hasn't gone live yet. As discussed with Cedric, this is going live in Feb.	
Intent-Aware Product Ranking (IAPR)	Medium	Can this be explained in the existing course on PR? We can already see this on front-end, but it hasn't gone live yet. As discussed with Cedric, this is going live in Feb.	
Case Classification (CC)	Medium-high	We ideally should have courses specific to Case Classification Model. The present courses on Coveo Case Assist (salesforce) cover this presently.	Implementing Coveo Case Assist in Salesforce
Relevance Generative Answering (RGA)	High	No courses on this ML Model on level up yet. A course exists on the concept and goes a little into how it works.	Relevance Generative Answering
Semantic Encoder (SE)	High	No courses on this Model on level up yet.	
Content Recommendations (CR)	High	No courses on this Model on level up yet. One course on troubleshooting exists.	Troubleshooting Content Recommendations Models
Introduction to Coveo Machine Learning Features (Conceptual courses)	High	Not a ML model, but an overview of all ML models by Coveo. Concept of ML from Coveo's lens. Cover's the first 7 models.	Introduction to Coveo Machine Learning Features Coveo Machine Learning Query Pipelines and Machine Learning
Profitability Estimation Module (PEM)	High	This is a new commerce model which will be out soon (Q1-24).	
Conversion Estimation Module (CEM)	High	This is a new commerce model which will be out soon (Q2-24).	
Query Understanding (QU)	High	This is a new commerce model which will be out soon (TBC).	

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7. I tracked the work that would be needed to create the training program using the form shown in Figure 9. Pay attention to the first two tabs at the bottom of the figure, which contain surveys: one to determine the extent to which the content was outdated and the second one to determine gaps in the content. Also note that I estimated the extent of the workload needed to develop the new training on this sheet, which was used to determine schedules for the project.

Challenges and Accomplishments

One of the challenges in needs analysis was that while in formal training, I was expected to identify the business goals, requirements, analyze the learner, etc, my work at Coveo did not give me the opportunity to consult in those areas. Most of the decisions were already made, hence me and my team where mostly looking at content creation.

The biggest challenge I faced when working on the needs analysis was my limited familiarity with the product. In my previous role as a technical writer, I worked for a different group within Coveo and did not work on Machine Learning models, although I was aware of the centrality of these models to the products developed by Coveo. I approached this challenge as an opportunity to learn about a new domain. Going through all the courses to identify the outdated and missing content first provided me with an opportunity to learn some of the content in the first place and significantly deepen my awareness of Machine Learning. Going through the current courses also provided an opportunity to conduct a personal usability test of the courses and become more familiar with them from the learners' perspective.

I was fortunate that, despite my initial lack of knowledge about Machine Learning, my manager trusted me with the project and appreciated her being available as a helpful resource throughout

the needs analysis. I also came to appreciate the learning that happened during this milestone because I applied the knowledge and skills developed through this effort throughout the internship project.

Milestone 2. Design Plans

The design plans served as a blueprint for the course development, capturing essential details gathered during the needs analysis. The purpose of the work towards this milestone was to create a design outline that would establish the information and scope that was collected during needs analysis. Since the education team did not have a process to develop a needs analysis report, I would say this document was in a way a short form of needs analysis alongwith design outline. The completed product of this work were EdPlan_introduction-ML-models, EdPlan_Core-ML-models, EdPlan_Commerce-ML-models, EdPlan_Service-ML-models. This work lasted approximately one week. This section describes my work towards this milestone.

About My Work

The design plans were intended to provide descriptions of the project, the target audience and questions that will be answered through the course, the learning objectives, the reviewers who would review drafts of the course for technical accuracy and the suggested format of the course. I began preparing the design plans by looking at the decks that were used by enablement team to train the commercial teams in the past.

1. Working in Microsoft Word, I then prepared each section of the design plans.
    a. Course (Skill) & Desired Outcome**:** I gave a name to the course and prepared a short description of the project, I identified which courses fall into the category of core, commerce and service models by discussing with the SMEs.
    b. Project Team**:** This section included the names of education team members who were

involved in this project. I included my manager and my name, and the name of IDs who were going to work on creating the storyboard for any of the core machine learning models.

c. Questions: Specific inquiries or problems the program aimed to address, guiding the content development and ensuring learner needs are met. I consulted these questions with the business SME during needs analysis.

d. SMEs: List of technical and business SMEs, who could be contacted if any information is needed.

e. Desired Outcome: Clear, measurable goals stating what learners should be able to do, know, or demonstrate after completing the program.

f. Reviewers: Designated individuals responsible for assessing content quality, technical accuracy, and alignment with objectives before final approval.

g. Key Concepts: Essential ideas, theories, or skills that must be mastered by participants.

h. Target Audience: List of learners who were the intended to learn from this course.

i. Existing resources: Available resources included both internal and external material. I referenced previous training content, technical documentation, Coveo blog and support articles. YouTube videos and external blogs about how machine learning is usually incorporated in similar contexts gave me conceptual clarity and added creativity to the content.

j. Suggested format: Proposed delivery method(s) for the program, such as e-learning, workshops, or blended learning, based on content and audience needs. In this case, I chose online self-study format. We also created narration, so in the future, if the organization wants to record the slides with a voiceover and use video courses for self-

study, it will be easily doable.

2. I documented the decisions in a document called a fast-track education plan. It is called a fast-track plan because it is a short document that establishes all key information in a succinct manner. I followed a template that the department that evolved from an earlier a need analysis document. The plan was 3 pages long. The document was approved by the business SME and intended to act as the basis of the final storyboard and I assume act as a contract between instructional design team and the SMEs**.** It was directed to**.** The report contained these sections, which aligned with the work I did:

After the plan was ready, I shared it with my manager for review. She commented on maintaining consistency across all for courses and having more attention to details.

After I revised the plan, my manager shared it with the Manager of Enablement for approval. As she was our business SME, she added a few extra points which were good for the commercial teams to know. After I revised the plan again, it was approved. The approved design plans helped clarify expectations within the organization about what the course would cover, the learners it would serve, the form it would take, and how it might look. Of course, this changed once we started to develop the storyboards.

Challenges and Accomplishments

There were a few challenges that I encountered during the design phase. The approach of designing was also different than how I was trained. I was not given the authority to identify multiple interventions or formats of delivery, but it was already decided by the requester that they needed us to deliver PowerPoint decks.

Coming to the challenges I faced while implementing this task, first, I invested a significant time in defining the initial structure. However, when creating storyboard decks, many aspects changed

as we hadn't anticipated certain elements during the planning stage. Second, for some machine learning models, the lack of existing content made it challenging to create a design plan. I wasn't certain about the specific content that would be included.

However, following my manager's advice, I created similar objectives and maintained a consistent structure across all courses. This approach ensured cohesion when merging the courses and facilitated easier navigation for learners. With the appropriate information and clearly defined roles and responsibilities, this document served as a contract between technical and business subject matter experts and the instructional design team.

The resulting design plans were concise yet detailed enough to guide the storyboard creation process effectively. Other instructional designers later praised the structure, noting that it helped them create content seamlessly.

Milestone 3. Producing Storyboards

The purpose of the work towards this milestone was to create the storyboards, which will then be implemented by media production specialist**.** The completed product of this work was a set of storyboards that were sufficiently complete for production. This work lasted approximately 10 weeks. This section describes my work towards this milestone.

About My Work

When creating storyboards, I did the following:

1. Working in Microsoft PowerPoint and with a storyboard template used by all of the other instructional designers, I prepared drafts of the storyboards for three machine learning models, viz.., automatic relevance tuning, content recommendations and smart snippets. The storyboards covered the following information:
    a. Information in form of text, supported by images and videos.

   b. For each slide, narration was provided, which was improvised, but still kept the professional tone rather than making it sound casual or sales type.
   c. All storyboards followed the same structure to include four modules, so it can be merged into one course easily.

   Because I did not have much experience working with the storyboard template, the media production specialists helped me. Specifically, they helped me with creating the basic slides as per the brand guidelines and providing feedback on my initial slides.

2. A group of related storyboards was packaged as a deck.
3. The decks were distributed for review to my manager to ensure the tone and structure were consistent across all machine learning courses. The editorial review was also done by her to ensure there were no typos and grammatical mistakes.
4. Key issues raised in the feedback included adding introduction to the merged courses and harmonizing the narration.
5. I revised the storyboards to respond to the feedback.
6. Once my manager got all storyboards, ready to be merged after all instructional designers had incorporated the feedback, she merged the courses in respective categories.
7. The final deliverable of this milestone was 3 slide decks with core slide deck containing around 150 slides, service slide deck containing approximately 50 slides and commerce deck containing approximately 80 slides. narration, and name other materials provided.

I was not only developing my storyboard, but I was also given some extra responsibilities:

- Create the standard deck in terms of structure and tone of narration.
- Prepare and publish guidelines for the course structure that would be followed by the other instructional designers when creating their storyboard decks.

- Prepare the intermediate deadlines based on the tasks of milestones such as completion of storyboard, getting information from the SME, getting approvals, etc.
- Check with other instructional designers weekly to ensure they were not facing any challenges with the guidelines or extracting information, and that they were following the structure of the standard deck when developing relate modules in this program and that their tone harmonized with the rest of the courses.

Figure 9 shows a tracking sheet that I updated every week to share with my manager the progress of each of the courses on which I was working.

Figure 9

Tracking Sheet to Manage the Progress of the Project

ML Model	Status	Date updated	Assignee	% Completed (storyboard)	Lesson link	Sharepoint folder	Course link	Notes
Dynamic Navigation Experience (DNE)	In-review	4/19/2024	Danielle	100%	Dynamic Navigation Experience (Dani			Ready for merge
Relevance Generative Answering (RGA)	Executing	4/19/2024	Danielle	100%	ML Core - RGA.pptx			In-review with Laurent
Semantic Encoder (SE)	Executing	4/19/2024	Danielle	100%	Semantic Encoder.pptx	https://coveosolutions		Ready for merge
Query Suggestions (QS)	Executing	4/19/2024	Erika	100%	QS_storyboard.pptx			Ready for merge
Automatic Relevance Tuning (ART)	Executing	4/19/2024	Abhay	100%	ART_Storyboard.pptx			In-review with Danielle
Content Recommendations (CR)	Planning	4/19/2024	Abhay	100%	Content recommendations_Storyboard			In-review with Laurent
Smart Snippets (SS)	In-review	4/19/2024	Abhay	100%	Smart-Snippets_Storyboard.pptx	https://coveosolutions	Service-and-kno	Sent to Liz and Sebastian
Case Classification (CC)	Executing	4/19/2024	Marcelo	100%	Case-Classification_Storyboard.pptx			
Product Recommendations (PR)	Executing	4/19/2024	Laura/ Laurent	70%	ML_Commerce_storyboard.pptx	https://coveosolutions		Laura working on the feedback comments
Predictive Query Suggestions (PQS)								
Intent-Aware Product Ranking (IAPR)								
Session-Based Product Recommendations (SBPR)								

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Challenges and Accomplishments

I faced a complex challenge during this task when another instructional designer began working on their storyboard simultaneously with mine. At that time, we lacked a standard storyboard template and guidelines beyond the design plan. As a result, their course outcome differed significantly from the one I had developed.

My manager believed my content aligned with expectations and fulfilled the intended learning outcomes, given my involvement from the project's start. However, providing critical feedback to the other instructional designer, who had over a decade of experience, and asking them to

rewrite their content based on my storyboard's tone and structure proved challenging. My manager supported me and expressed confidence in my abilities.

This challenge brought out the best in my people management skills. I successfully guided the other instructional designer to follow my storyboard and design plan while building a strong rapport with them and other team members. I was then tasked with harmonizing the tone and structure of courses being developed by other instructional designers and given the responsibility to follow up with them.

Another challenge I encountered was setting realistic timelines for myself and the team. My lack of experience made it difficult to estimate course length and development time accurately. This was further complicated by the fact that I was estimating for twelve courses being developed simultaneously by five instructional designers, not just one course for myself.

I also realized I had left many tasks dependent on others for the final three weeks. For instance, we needed information from product enablement managers by April 12, less than three weeks before the deadline. Although I expected this information to be provided regularly as requested, the product team delayed until the last day and required multiple follow-ups.

In retrospect, I believe we divided the task among more instructional designers than necessary. With five people working on the project, each brought their own writing and narration style, making it challenging for the senior instructional designer to harmonize the tone across all courses. However, the review process I established in the guidelines helped ensure consistency in structure and tone before merging multiple courses into a single large course or skill path.

Overall, the storyboarding experience was rewarding, allowing me to demonstrate my creativity and improve my development and writing skills.

Milestone 4. Publishing the Course

The purpose of the work towards this milestone was completing production of the course so it could be shared with the intended learners within Coveo and the completed product of this milestone was the published course. This work towards this milestone lasted approximately1 week. This section describes my work towards this milestone.

When preparing to publish the course, my manager and the business SME decided that the course will be published in these formats.

- Online on the in-house LMS, level up, in a PDF format along with the knowledge checks for each module. The courses were distributed among the employees through the LMS.
- A PDF handout**,** slide deck and notes to the commercial teams so they could follow along while viewing the online self-study course.

In terms of accomplishments, I did not have a major role to play in this phase. Once I completed my storyboards, I shared them to the media production specialist, who oversaw just publishing or adding other media elements publishing the course.

However, the narration that I created while preparing the storyboards helped them during final production and publishing, thus saving the time for the production specialists.

In terms of challenges, this task was not finished at the time I finished my internship. The initial plan was to publish the course by the end of April, which was perfect for me because my internship ended on May 3. However, the project was delayed for a variety of reasons, such as late arrival of source material from which to work on the materials and longer-than-anticipated returns of technical reviews from SMEs.

Another issue causing delays in the project included the fact that course development was that it was not prepared using ASCII doc language, which made the instructional designers change their writing style. The standard slide deck did help overcome this challenge.

CHAPTER 4: LESSONS LEARNED

This chapter describes how the courses in the educational technology program prepared me for the internship at Coveo solutions and the lessons i learned from this experience.

How Courses in the Educational Technology Program Prepared Me for the Internship

All the courses in the Educational Technology program contributed to my preparation for the internship. However, some were more relevant than the others to my placement. This section names those courses and explains how they contributed to my preparation.

Fundamentals of Instructional Design (ETEC 650)

This course was undoubtedly the most valuable course in my educational technology journey: not just for the internship but earlier, during the process of interviewing for internships. The course helped me learn a system design process and provided hands on experience in preparing a needs analysis report for a real-world problem through a capstone project.

Even though I had the professional experience working with education management organizations, when I worked in those organizations, I did not really have any exposure to instructional design and adult learning principles. Concepts presented this course such as the systems approach to design, writing learning objectives, learner-focused design, evaluation, and related topics gave me the knowledge required to succeed in this field. All these things combined helped build a strong foundation off an instructional design career for me. The series of related assignments in the course were practical and thought provoking. I found the instruction on needs analysis in this course to be especially helpful.

Human Performance Technology (ETEC 651)

Because this course was a follow-up to the instructional design course, it was more intense. While the focus of the previous course was more on needs analysis and thinking of a training

course, this course compelled me to think out of the box and helped realize that training is just one of the solutions. But this course was also more concrete in that it focused on the design and development stages of the ADDIE process for the capstone project. I also found this course to be more advanced than the instructional design course because i produced a variety of content in a very short period to time. Perhaps most significantly, i learned in this course that training is not just about creating content but about solutions to broader performance problems. Training is just one way to achieve the desired performance. So, the course also explored other types of interventions such as job aids, newsletters and peer support that can also help achieve the desired performance goals.

I also feel very fortunate to have completed this course with dr. Ji Yae Bong, who has since left Concordia. She clearly had a lot of practical experience in developing learning resources and was able to bring the best work out of me. With her empathetic approach and understanding of the subject, she provided personalized guidance at all the times during the course.

Introduction to Digital Media (ETEC 665) and Designing and Developing Interactive Instruction (ETEC 669)

Even though both courses were electives i took them in my first and second semesters, which proved invaluable. I talk about both courses together because the final products of both were similar in nature and the tools that i learned during these courses were also similar. More than the tools, the lessons about designing and developing instruction that I learned in both courses were invaluable. These courses exposed me to authoring software such as Articulate Rise, Klynt, Adobe Photoshop, Illustrator and Premiere Pro. The tools knowledge is an invaluable asset in producing courses in my internship. The assignments in these courses taught by Dr. Giuliana Cucinelli required more than just authoring but also the underlying thought process of why

something is being developed and creating the related project documentations.

Educational Gaming and Modeling (ETEC 637)

I took this elective course during the summer of 2023. The reason I took this course during the summer was because it was being delivered by Edouard Rotondo, an industry professional with over two decades of experience. I did not want to miss this opportunity to learn from him. During this course, I learned how to create educational games. The course also helped me learn the difference between gamification and game-based learning, which I feel is a misunderstood distinction. In the fast-paced six weeks of the course, I developed a traditional board game, a digital board game, a couple of game plans and, as a final project, a card game with a group. This course strengthened my instructional design foundations, especially in needs analysis. Mr. Rotondo made sure the learners lived the importance of learning objectives and ensured that we created specific, observable and measurable learning objectives. This course also introduced me to several mechanics of designing games such as “points” and “leaderboards”. and helped me analyze that using gaming elements in courses requires careful forethought.

Other Valuable Courses

Apart from these courses there were a few foundational courses that I find I found helpful for my growth as education professional even though they did not have a direct impact on my internship. One was Learning Theories (ETEC 613) taught by Dr. Ofra Aslan, which was instrumental in me in my expertise on andragogy, as mostly of my prior experiences involved teaching children: pedagogy. I learned how adults learn and Gagne’s principles (which aims to enhance student learning and engagement by providing a systematic framework for designing effective instructional experiences), among others.

Research Methods (ETEC 640) taught by Dr. Julie Corrigan helped demonstrate various research

tools such as questionnaire and interviews. Even though I had some previous experience conducting education research in my previous professional experience where we interviewed and assessed instructors and students, I did not have expertise with research in education, nor was I familiar with the jargon.

Educational Computing (ETEC 660) taught by Dr. Steven Shaw exposed me to various tools and technologies in education such as knowledge management systems and greater emphasis on accessibility and explained how educational technology has evolved over the last decade.

Working as a research assistant with Dr. Saul Carliner and later with Dr. Eugenia Vasilopoulos helped me become better at research, as well as improve my authoring skills. For Dr. Carliner, I extracted the literature from databases such as EBSCO, created structured abstracts in Microsoft word and coded information in a spreadsheet format for the project informal learning in workplace. For Dr. Vasilopoulos, I extracted the literature from multiple databases including EBSCO, JSTOR, etc, and coded the information in a spreadsheet for the project AI tools in ESL. Although outside of the formal curriculum of the program, both provided practical experiences that were instrumental to my success during the internship.

LESSONS LEARNED FROM THE WORK EXPERIENCE

This section highlights the main lessons I learned during my internship at the Coveo Solutions, lessons that helped me realize common truths about the work of an instructional designer in a tech organization.

Lesson 1: Identify Your Audience

While I was creating the course in my internship, I realized that identifying your audience is essential if you want to do justice to your course. To be honest, sometimes I would include less

information than needed and other times, include much more than learners needed. For example, the audience for the course on Machine Learning models was diverse, with differing levels of expertise, different job roles, and other differences. So, I put thought into how "technical" the course should be. I tried to control the amount of technical content, when possible, but made sure the jargon on AI and Coveo were limited. As I worked on the course, I realized that, even in terms of the terminology used, an awareness of the target audience (learner) and its knowledge level was essential to choosing the right term and recognizing when I needed to either choose another term or define it.

Similarly, some learners are low maintenance (who are self-sufficient individuals requiring minimal guidance or support to achieve educational objectives) and some will be high maintenance (learners demanding extensive attention, resources, and support to progress through educational content) and the rest average maintenance learners. The content created must cater to all of these types of learners.

Similarly, examples, hands-on exercises to practice skills, and quizzes to assess learning are needed. But they should be relevant and meaningful to the learners, something that is only possible if the designer has a clear conception of whose these learners are.

Lesson 2: Leveraging AI in Instructional Design

Artificial Intelligence (AI) is impacting instructional design, offering tools to enhance efficiency and creativity. As an instructional designer at Coveo, a company specializing in AI solutions, I've had the opportunity to explore these advancements firsthand.

AI can significantly reduce the time required to develop e-learning courses. For instance:

- Content Generation: AI can draft initial content, outlines, or scripts, which designers can

then refine.

- Asset Creation: AI tools can generate images, graphics, or even simple animations, reducing the need for extensive graphic design work.
- Personalization: AI can analyze learner data to suggest personalized learning paths or content adaptations.
- Translation and Localization: AI-powered translation tools can speed up the process of creating multilingual courses.

At Coveo, we use AI tools like LEAi and Co-pilot to streamline our workflow. While the specific time savings vary depending on course complexity, I've been able to experience significant reductions in development time in tasks such as creating narration, summarizing information or rewriting for different contexts, compared to traditional methods.

As the field evolves, it's important for instructional designers to stay current with AI advancements and integrate these tools into their workflow to meet increasing productivity expectations.

Lesson 3: Set Realistic Deadlines to Ensure Timely Delivery

My project management skills improved during this internship because I was expected to estimate schedules for projects, intermediate deadlines for completing milestones and following up with instructional designers on their progress.

I felt that I did not do justice to the intermediate milestones on the project and that, in turn, was one of the reasons for delays. I came to recognize the dependencies that linked the intermediate milestones as well as realized that those milestones also left little leeway if something went off

track. Most of all, I realized that, by establishing realistic deadlines including ones for the intermediate milestones, I was more likely to deliver materials when expected. That, in turn, built confidence in the instructional design team.

Lesson 4: Develop Production Skills to Enhance Instructional Design Capabilities

Our team included two media production specialists responsible for establishing and enforcing the visual identity of our work. They communicated with branding and marketing teams about corporate visual standards and developed and maintained templates for course materials, ensuring alignment with organizational guidelines. These specialists also maintained and updated design guidelines for training programs.

Senior instructional designers on my team relied on media production specialists for their interactive design needs, partly to ensure compliance with design guidelines and possibly due to limited skills with production tools. Coveo uses Adobe Captivate as its primary course authoring tool. Typically, instructional designers develop content in storyboards and submit them to media production specialists, who convert these storyboards into interactive instruction.

Driven by my enthusiasm for learning different tools, I created my own images, videos, and GIFs using Camtasia, Snagit, and Figma. This ability to work with these tools enhanced my independence and sometimes allowed me to complete tasks more quickly by eliminating the need for back-and-forth communication with specialists. However, I acknowledge that I likely spent nearly double the time a media production specialist would have on these materials, potentially reducing overall efficiency.

Nevertheless, I can produce materials independently when necessary, and remain convinced that these tool skills strengthen my value as an instructional designer

Lesson 5: Broaden views Related to Marketing and Design

Working with various teams at Coveo that developed content and instructional design has significantly expanded my perspective, particularly in relation to marketing and design principles.

As a result of my experiences in the program and internship, I've developed a critical eye for instructional design in various contexts. Now, when I encounter any form of information delivery—be it a course, advertisement, or even a recipe—I automatically evaluate its effectiveness. I consider factors such as audience targeting, branding, and information presentation. This habit of analysis helps me continuously refine my own instructional design skills and identify areas where professional instructional design could enhance communication in various fields.

CHAPTER 5: SUGGESTIONS

This internship was a rewarding learning experience that significantly contributed to my professional, as well as personal life. However, there is still room for improvement and this final chapter provides recommendations for the three stakeholders in the internship: Coveo Solutions inc., the Educational Technology program at Concordia University, and future interns.

SUGGESTIONS FOR COVEO SOLUTIONS INC.

The host organization, the Coveo, did an excellent job supporting me during the internship. Here are some highlights:

- Just as companies typically have an initial three-month period for full-time employees to get accustomed to the organization, Coveo has designed a program for interns called Coveo 30. When I started with Coveo, the Human Resources specialist shared with me a list of everything that I needed to complete over the next four weeks to become familiar with the company, team members and the processes followed by the instructional design team. The instructions outlined a series of activities including reading specific company documentation and talking to different people to learn about the work of Coveo. I was also assigned a buddy to answer all my questions, how to fix the coffee machine to how to fix the issue on GitHub.
- My manager was supportive and really trusted my abilities. From the first day of my internship, . she involved me in tasks that needed decision-making, organization and management. I appreciated this trust,

- The instructional design team at Coveo was also supportive, not just when I was doing well but also when I needed help. Because I was new, I had a lot of questions, and my mentor was very happy to answer all of them with utmost patience. The e instructional design team was welcoming.
- That welcoming approach seemed reflective of the company, where the well-being of employees and interns was aways a priority.

To make the internship experience even more successful for future interns, I have the following recommendations:

- The onboarding process should incorporate hands-on experience right from the start. Even though the onboarding was managed well, it required a lot of reading covering a lot of information. Perhaps it involved too much information because, when I was working on tasks later, I had to re-read the material. I had not retained it. In fact, there is so much information available on the Coveo platform that learning by doing might make better use of the time of the intern.

- SMEs should be more responsive to requests from interns. During my internship, I experienced delays in project delivery due to slow responses from SMEs, which was unfortunate and impacted my ability to complete tasks on time.

- The instructional design team needs more visibility within the organization. It's apparent that people outside the group, particularly in technical teams, are not fully aware of what instructional designers do or what information they need to complete their jobs. This lack of understanding can lead to communication gaps and delays in project completion. Increasing awareness about the role and needs of instructional

designers could improve collaboration and efficiency across departments.

- It's hard to foster innovation or suggest a new process in a very fast work environment such as at Coveo. As Coveo is a growing organization, it follows a process-oriented approach and as an intern, I found it hard to suggest and implement a new process in a short period to time. I realized that as an instructional design team we are not focusing a lot on the evaluation part of ADDIE. As a proponent of the Katzell-Kirkpatrick model of evaluation, I made a few suggestions at the start of my internship and my manager was really excited to implement them. But with back-to-back deadlines, we did not have a chance to even try to implement the suggestions during the short time of my internship.

SUGGESTIONS FOR THE EDUCATIONAL TECHNOLOGY PROGRAM

The Educational Technology program supported me before and throughout the internship. Specifically, the program supported me as follows:

- My internship coordinator, Rosa Cerone, was great and all the communication throughout the internship before and after the internship. She understood my requests and she was very empathetic to some of my requests that might not seem important for a Canadian student but were very important from the standpoint of any of an international student, such as arranging an early report-review and presentation for me, as I requested her that I need to graduate as soon as possible due to personal circumstances. She responded to my emails in time, scheduled my report presentation on June 27, instead of early September. jumped on a zoom call when needed and facilitated the mid internship meeting with my manager.

- The entire educational technology program was beneficial to me personally and professionally. The Courses are industry-friendly, that is, educational content tailored to meet real-world workplace demands and current market needs and prepares the students for a variety of career choices such as instructional design, performance consulting, and learning experience designer.
- The resources provided for interns were well-organized, ensuring success in the experience. I did not face issues preparing assignments such as the proposal, internship logs, or this report. I was given templates and supporting documents.

To strengthen the internship experience for future interns, I have four recommendations:

- The way that the internship and the internship report are placed at the end of the program is not very friendly for international students. For example, I did my internship in winter 2024 and am writing my report in the summer term 2024. Unfortunately, I cannot take a full-time job while working on the report because international students have limits on the number of hours that they can work. To help this situation, the program structure needs to be so international students can join the workforce immediately after their internship ends, which gives them the equal opportunity to continue to work in the same way, just like any other Canadian student.
- I had limited interaction with my internship faculty supervisor during the internship period, meeting only before the internship began. However, as explained by my supervisor afterwards, it was a special situation, and he would have loved to communicate more if his commitments allowed him.

  It's worth noting that my supervisor agreed to review this report on an expedited timeline, as it was originally due in July when more time would have been available

for thorough review and feedback. So, he did go above and beyond when I needed his time.

Taking a lesson for myself, In the future, I will strive to communicate more effectively and seek clarification when faced with challenges during internships or similar experiences. This situation has highlighted the importance of open dialogue and understanding the broader context of faculty commitments and departmental resources.

- The courses on instructional design and human performance technology offered valuable hands-on experience. However, I found the option to choose my own assignment somewhat challenging. At the time, the topics I selected seemed appropriate, but my limited understanding of the instructional design field led to choices that are not the best fit for my portfolio. In contrast, the topics assigned by faculty in other courses were more suitable for an instructional design portfolio.

  I recognize that this is a subjective opinion. Had I chosen topics more aligned with my target industries, I believe I would have been more satisfied with the outcome. Hence, my only suggestion is that it's better to provide prompts for the assignments, and then the faculty can be a flexible if students want to make a few minor modifications, so they don't have to invest heavily in learning the subject matter.
- Communication channels between students can be established:
    - Intern centric: There are some Facebook groups but those are not very active and are not specific to internship candidates. A simple online forum on model where they can interact and ask questions if they are facing any challenge during the internship can make a huge difference.

- Alumni centric: I feel very strongly about having an active alumni network that is managed by the department or the university. The reason I emphasize a lot on this is based my experiences in India. India has over 1000 universities and around 44000 colleges (Ministry of Education, 2020). There are a handful of them that are renowned on a global scale, and a common trait in those is – a strong and engaged alumni network.

SUGGESTIONS FOR FUTURE INTERNS

Before the internship starts, I recommend that students:

- Take Introduction to Digital Media (ETEC 665) or Designing and Developing Interactive Instruction (ETEC 669) early in the program. Although the other courses are preparing you to be better at research and writing, these courses focus on in development important if you want to go into instructional design.

  As pointed out by my faculty supervisor, although production skills are good for entry-level jobs, the other courses (plus the interactive instruction course) prepare students for jobs they will want in five to ten years that require research, more conceptual design rather than production, curriculum planning, and other broader skills.
- Try to finish your core courses as early as possible. I had the opportunity for an internship earlier in the program but was not eligible I had not fulfilled the requirement that all core courses must be completed before students are allowed to start their internships.
- Create an account on LinkedIn if you do not already have one. . Those going into industry will find that start to build their networks early can help them with job

seeking.

- Create your portfolio and update it regularly. The reason you should develop a portfolio is that we are in a creative field, and it is important to showcase your work. The portfolio should include information about you, and the list of projects that you created for each course you took in the program. If there is a passion project that you created, include those as well. Host the on a website such as Wix, Google sites, Wordpress and Squarespace. You can also buy a domain name and server space to host your website, just like I have done for www.abhayjuneja.com.
- Learn to use AI in your everyday tasks. For example, use perplexity.ai to ask questions about topics you are curious about. Perplexity provides you references for further reading or you can ask to follow up questions to know more. Organizations are incorporating AI into their processes to become more efficient, and I expect that, in the not-too-distant future, it will become a part of our jobs.
- If you get a chance, try to do part time research or teaching assistant. I worked as research assistant for two projects informal learning in workplace and AI tools in ESL and learned writing structured abstracts and coding the most important information**.** The benefits of working in a Canadian university with knowledgeable professors can help your career by providing hands-on experience in conducting and presenting academic research, which is highly valued in both academic and industry settings.

During the internship, I recommend that interns:

- Read the previous internship reports by previous students, that are available on Moodle. Ask your faculty supervisor for more samples if needed.

- Ask questions! But watch which questions you ask—focus on informed questions. For example, my employer had an online guide that answered many of the most common questions asked by interns. Among the issues raised in that guide: my employer expected people to first find the answer on their own before asking others. The resulting questions are informed ones because they were ones that were asked only after the intern first tried to find the answer on their own and could not. Asking questions that one can just as easily answer through their own initiative reflects poorly on the person asking the question.
- Share your ideas with your team. The highlighted does not make sense. Revise so it is clear. Most of the members in my team went to university like a decade back, so me being fresh out of school bringing in new ideas was always appreciated during my internship.
- Remember that your internship is a learning experience. As such, you should also expect to receive feedback and be open to the feedback that you receive. In my experience, the feedback provided by my supervisors and peers was intended constructively and helped me grow.

Disclaimer: Certain AI tools were used to assist with preparation of this report, including dictation for preparing the first draft, and the editorial assistance tools for preparing the second draft. Specifically, I used Perplexity AI (*Perplexity AI (n.d.)*) and Microsoft Co-pilot (*Microsoft copilot (n.d.)*). My supervisor has said that this would be fine, as long as I did not use generative AI to prepare original text for the report.

REFERENCES

Allen, S. A., & Gardner, J. L. (2021). Project management competencies in instructional design. *Online Journal of Distance Learning Administration*, *24*(2), https://eric.ed.gov/?id=EJ1311023

Anantrasirichai, N., & Bull, D. (2021). Artificial Intelligence in the creative industries: A Review. *Artificial Intelligence Review*, *55*(1). Retrieved February 6 date, 2024 from https://doi.org/10.1007/s10462-021-10039-7

Arthur, W., Bennett, W., Edens, P. S., & Bell, S. T. (2003). Effectiveness of training in organizations: A meta-analysis of design and evaluation features. *The Journal of Applied Psychology*, *88*(2), 234–245. https://doi.org/10.1037/0021-9010.88.2.234

Aryadoust, V. (2016). Adapting Levels 1 and 2 of Kirkpatrick's model of training evaluation to examine the effectiveness of a tertiary-level writing course. *Pedagogies: An International Journal*, *12*(2), 151–179. Retrieved March 10 date, 2024 from https://doi.org/10.1080/1554480X.2016.1242426

Cahapay, M. B. (2021). Descriptive analysis of the limitations of the Kirkpatrick model in higher education evaluation. *International Journal of Assessment Tools in Education*, *8*(1), 135-144.

Caramiaux, B., Lotte, F., Geurts, J., Amato, G., Behrmann, M., Bimbot, F., Falchi, F., Garcia, A., Gibert, J., Gravier, G., Holken, H., Koenitz, H., Lefebvre, S., Liutkus, A., Perkis, A., Redondo, R., Turrin, E., Viéville, T., & Vincent, E. (2019). *AI in the media and creative industries*. Inria.hal.science. https://inria.hal.science/hal-

02125504

Carliner, S. (2012). Different approaches to similar challenges: an analysis of the occupational cultures of the disciplines of technical communication and training tutorial. *IEEE Transactions on Professional Communication, 55*, 160-174.

Carliner, S. (2001). Emerging skills in technical communication: the information designer's place in a new career path for technical communicators. *Technical Communication, 48*(2), 156–175. Retrieved January 20, 2024 from http://www.jstor.org/stable/43088815

Ch'ng, L. K. (2023). How AI makes its mark on instructional design. *Asian Journal of Distance Education, 18*(2), 32-41. Retrieved February 6, 2024 from https://doi.org/10.5281/zenodo.8188576

Cox Dorcas, M. T., & Cox, D. M. T. (2009). *Project management skills for instructional designers: a practical guide*. iUniverse.

Davies J, Klinger J, Mateos-Garcia J, Stathoulopoulos K (2020) The art in the artificial AI and the creative industries. *Creat Ind Policy Evid Centre* 1–38

Fechter, J. (2021, December 22). *Essential Technical Writing Skills [2023]*. Technical Writer HQ. Retrieved January 20, 2024 from https://technicalwriterhq.com/career/technical-writer/technical-writing-skills/

Gao, Yuping. (2023) AI-based adult education model. *Lecture Notes in Electrical Engineering*, 1 Jan. 2023, 463–470. Retrieved February 8, 2024

from https://doi.org/10.1007/978-981-99-1428-9_57.

Hart-Davidson, W. (2001). On writing, technical communication, and information technology: The core competencies of technical communication. *Technical communication*, *48*(2), 145-155.

Hoffman, R. R., Mueller, S. T., Klein, G., & Litman, J. A. (2018). Metrics for Explainable AI: Challenges and Prospects. *ArXiv (Cornell University)*. https://doi.org/10.48550/arxiv.1812.04608

Hughes, M. (2004). Mapping technical communication to a human performance technology framework. *Technical Communication*, *51*(3), 367–375. Retrieved January 20, 2024 from http://www.jstor.org/stable/43090554

IBM. (2023). *What are AI hallucinations? | IBM*. Www.ibm.com. https://www.ibm.com/topics/ai-hallucinations

Jain, D. M. . (2021). An overview of project management. *The Journal of Contemporary Issues in Business and Government*, *27*(3), 700–704. Retrieved April 1, 2024 from https://cibgp.com/au/index.php/1323-6903/article/view/1654

Jantke, K. P., & Knauf, R. (2005). Didactic design through storyboarding: standard concepts for standard tools. *Proceedings of the 4th International Symposium on Information and Communication Technologies*, 20–25. Retrieved April 30 date, 2024 from https://doi.org/10.5555/1071752.1071757

Keating, G. (2013). Storyboarding in eLearning. *Training & Development*, *40*(1), 20-21.

Kennedy, P. E., Chyung, S. Y., Winiecki, D. J., & Brinkerhoff, R. O. (2013). Training professionals' usage and understanding of Kirkpatrick's Level 3 and 4 evaluations. *International Journal of Training Development*, Retrieved March 6, 2024 from *18*(1). https://doi.org/10.1111/ijtd.12023

Maity, S. (2019). Identifying opportunities for artificial intelligence in the evolution of training and development practices. *Journal of Management Development*, *38*(8), 651–663. Retrieved February 10, 2024 from https://doi.org/10.1108/jmd-03-2019-0069

Microsoft copilot: Your everyday ai companion. Microsoft Copilot: Your everyday AI companion. (n.d.). https://copilot.microsoft.com/

Ministry of Education releases All India Survey on Higher Education (AISHE) 2020-2021. (n.d.). Gov.In. Retrieved June 21, 2024, from https://pib.gov.in/PressReleasePage.aspx?PRID=1894517

Okur, M. R., & Gümüş, S. (2010). Storyboarding issues in online course production process. *Procedia, Social and Behavioral Sciences*, *2*(2), 4712–4716. Retrieved April 30, 2024 from https://doi.org/10.1016/j.sbspro.2010.03.755

Pan, C.C. & Pan, C.C. (2012). A symbiosis between instructional systems design and project management. *Canadian Journal of Learning and Technology / La revue canadienne de l'apprentissage et de la technologie, 38*(1),. Canadian Network for Innovation in Education. Retrieved April 14, 2024 from https://www.learntechlib.org/p/42851/

Parrish, P. (2006). Design as storytelling. *TechTrends : For Leaders in Education & Training*, *50*(4), 72–82. Retrieved April 30, 2024 from https://doi.org/10.1007/s11528-006-0072-7

Pavitra, K. H., & Agnihotri, A. (2023). Artificial Intelligence in corporate learning and development: Current trends and future possibilities. *2023 Second International Conference On Smart Technologies For Smart Nation (SmartTechCon)*. Retrieved February10, 2024 fromhttps://doi.org/10.1109/smarttechcon57526.2023.10391698

Perplexity AI. (n.d.). Perplexity AI, Inc. https://perplexity.ai/

Tan, K., & Newman, E.J. (2013). The evaluation of sales force training in retail organizations: a test of Kirkpatrick's four-level model. *The International Journal of Management*, *30*, 692.

Terttiaavini, Marnisah, L., Yulius, Y., & Saputra, T. S. (2020). Evaluating the kemplang tunu production training for low income and education communities using the Kirkpatrick model. *Proceedings of the International Conference on Management, Accounting, and Economy (ICMAE 2020)*..

Van Rooij, S.W. (2011). Instructional design and project management: complementary or divergent? *Educational Technology Research and Development*, *59*(1), 139–158. Retrieved March 6, 2024 from https://doi.org/10.1007/s11423-010-9176-z

Van Rooij, S.W. (2010), Project management in instructional design: ADDIE is not enough. *British Journal of Educational Technology*, *41*: 852-864. Retrieved March 6, 2024 from https://doi.org/10.1111/j.1467-8535.2009.00982.x

What Is The Kirkpatrick Model? (2021, August 15). Kirkpatrick Partners, LLC. Retrieved June 21, 2024 from https://www.kirkpatrickpartners.com/the-kirkpatrick-model/