Evaluation Report for PD2045: Course Planning and Alignment Map

Heather Nester

Department of Instructional Design and Technology, University of Cincinnati

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Dr. Kay Seo

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Introduction

PD2045: Success on the Pre-Health Pathway is a college course at the University of Cincinnati intentionally designed for mid-collegiate undergraduate students pursuing a career in the health professions (i.e., medicine, dentistry, pharmacy, optometry, veterinary, physical therapy, occupational therapy, physician assistant, podiatry, nursing, etc.). The focus of the pre-health course is on the application, integration, and deepening of knowledge of pre-health topics including research, continued professional development, pre-professional application preparation, and understanding the benefits of experiential learning. Self-reflection is central to the course as students will analyze their aptitudes, strengths, weaknesses, preferences and values as they relate to health professions pathways and develop short- and long-term professional goals in pursuit of their intended professional pathway. In the context of this course, experiential learning is defined as a "progressive method of instruction that affords students an opportunity to generate a deeper understanding of lecture topics by working on course-related issues that, when resolved, benefit their local communities" (Williams, 2016, p. 64).

The purpose of the *PD2045: Course Planning and Alignment Map (CPAM)* is to ensure alignment between course learning outcomes and the module assessments, learning materials, and activities. Utilizing an alignment map supports an effective instructional strategy, which in turn positively impacts learners. This process ensures the instructional materials, and the activities associated with them, leads to student mastery of course content, which directly aligns with the course outcomes (Dick et al., 2015. p.174).

In addition, through the evaluation of learning materials and activities, the instructor can ensure diverse motivational approaches for learners. Motivational Design is used by instructional designers to routinely improve a learner's motivation to learn (Keller, 1983). By utilizing John

Keller's ARCS (Attention, Relevance, Confidence, and Satisfaction) Model of Motivation (Dick et al., 2015, p. 175) the instructor can design resources and instructional activities to increase motivation in learners (Keller, 2016). To achieve this goal, instructors should create ways to strengthen learners' confidence in their abilities by helping them believe they can accomplish the learning objectives (Pappas, 2015). Learners with "...higher confidence are more willing to learn, challenge themselves, and have better resilience in the face of difficult transitions" and are a "number one predictor of academic achievement" (Gill, n.d.).

Alignment and motivational design were integral to both the design process and final product of this artifact. Instead of starting where many teachers begin, which is "...with textbooks, favored lessons, and time-honored activities rather than deriving those tools from target goals or standards" (Wiggins & McTighe, 1999), it is important to start with the intended learning goals of the course. Focusing on the course learning objectives first is supported by the backward design framework where instructors must consider the overarching learning goals, including how to assess students, before considering how to teach the content (Bowen, 2017). The Course Planning and Alignment Map (CPAM) utilizes the backward design framework and has intentionally been dissected into five main columns to ensure connection to the overarching course objectives: Module, Module Objectives (Course Objective Alignment), Assessment, Learning Materials, and Activities. The course objectives are supported by the key topics within the Modules. In turn, the Modules are supported by the module objectives to support consistent alignment to course-level objectives. After these two categories the assessments outline how the module objectives will be completed. Learning materials and activities are then created to support learners' ability to successfully complete the assessments and achieve the module objectives.

Within the learning materials and activities the subject matter experts (SMEs) also had the opportunity to evaluate integrated learning technologies to support learners ability to meet the learning outcomes. Two examples of integrated learning technologies within the CPAM include:

1. Use of artificial intelligence with VMOCK for resume activities and assignments in the Professional Portfolio module. This process improved the feedback loop and allowed the feedback to be "customized and eventually optimized for the needs of each learner" (Owoc et al., 2021).
2. Use of gamification with PlaySpent for social determinants of health in the Success in Pre-Health Pathways Module. The use of games as content allows for focused learning on a specific topic or set of skills (Driscoll, 2022).

Evaluation Overview

The goal of the evaluation plan was to gather feedback on whether the course content, activities, and assessments sufficiently support the achievement of course-level objectives. SMEs utilized a Microsoft Forms questionnaire to evaluate whether 1) course content, material, and activities are aligned with and promote the attainment of course learning objectives, and 2) the course contains enough motivational elements to ensure student engagement. The use of a digital questionnaire as the selected evaluative technology created an opportunity for SMEs at the University of Cincinnati, who are connected with the target students' learning environment, to provide feedback on supportive learning content and create a more collaborative learning environment (Bennet, 2023).

To evaluate the effectiveness of the CPAM it is important to use methodologies and tools that align to the project and are supported by literature. The methodology used in this evaluation

plan was a questionnaire completed by SMEs in the field of experiential learning and career education. As noted by Dick et al (2015), a "reviewer outside the project who has special expertise in the content area of instruction, should comment on the accuracy and currency of the instruction" (p. 287). The target learning population was not surveyed during this evaluation due to the time restrictions dictated by the IDT: 8130 Master's Project Course. Instead, professionals familiar with the pre-health professions were utilized as SMEs because they are professionals who "can look at the instruction through the target population's eyes and react" (Dick et al., 2015, p. 288).

Questionnaires were utilized because they are flexible and can be completed by SMEs when available, allowing for standardized responses through the creation of well-structured questions, and provide anonymity and confidentiality in responses (Lindemann, 2023). Questionnaires were also used to support the design and development phases of the Analysis, Design, Development, Implementation, Evaluation (ADDIE) Instructional Model to "...improve teacher instructional strategy and student academic performance" (Szabo & George, 2022). The information learned from the questionnaire further supports the ADDIE Instructional Model when responses are used to influence the course construction during the subsequent stages of implementation and evaluation.

Questionnaires were appropriate to evaluate the CPAM because it is an efficient way for SMEs to review a "...bird's-eye view of your objectives, assessments, and instruction" so they can "...help identify areas where you might need to provide additional support, remove scaffolding, or make other types of typical enhancements ore revisions" (Shaw, 2019). It will be more efficient for SMEs to review an overview of the course than being tasked with evaluating a complete outline of individual classroom activities, instructions, articles, slides, and so on.

Evaluation Methodology

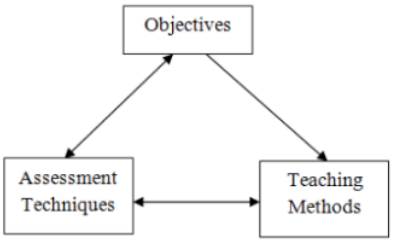
SMEs were invited through e-mail from a pool of University of Cincinnati faculty and staff with the required expertise because they were the most familiar with additional resources on the campus the course is offered. This allowed respondents to provide more specific suggestions based on knowledge of resources and support services students can access. Responses were collected via a Microsoft Forms digital questionnaire over a two-week period. The time period was intentionally selected to provide enough time for thoughtful responses but was also restrictive enough to meet the timeline requirements of the data collection process set by the IDT8130 Capstone course.

Five SMEs provided responses to Likert-style and open-ended response questions for three categories of questions: Pre-Test Questions, Part 1: Alignment to Course Objectives, and Part 2: Motivation.

Questions in Part 1 utilized The Education Triangle (Sewell et al., 2010), depicted in Figure 1, to evaluate if the CPAM content successfully meets the course objectives by ensuring the course objectives, teaching methods, and assessment techniques map together. It is important for these three areas to connect because a “more constructively aligned teaching and learning environment would lead students to adjust their learning approaches” (Wang et al., 2013, p. 457) to a deeper learning approach instead of skimming the surface on each topic.

Figure 1

The Educational Triangle



Questions in Part 2 were informed by the Attention, Relevance, Confidence, and Satisfaction (ARCS) Model of Motivation. To address the ARCS Model, the questionnaire was influenced by the complementary Summative Evaluation Questions from Principles of Motivation (Dick et al., 2015, p. 357).

The combined influence of The Educational Triangle and the ARCS Motivation Model allowed the CPAM to be thoroughly reviewed by career education experts and pre-health professionals. The opportunity to provide both quantitative feedback with Likert-scale questions and qualitative written responses at the end of part one and part two allowed for multiple opportunities to gather valuable data that will help strengthen the course before introducing it to students.

Data Analysis and Results

Sample

Data was collected from five subject matter experts (SMEs) who had expertise either in experiential learning or expertise in the pre-health professions. Responses were collected over a two-week period through a digital Microsoft Forms Questionnaire. Participants' responses were downloaded from Microsoft Forms to Microsoft Excel for data analysis. Demographic information about participants was collected in the pre-test questions portion of the questionnaire as shown in Table 1, Table 2, and Table 3.

Table 1

Topic of Expertise: Which topic do you consider yourself to be a content-area expert in?

Response	Count
Pre-Health Professions & Exploration	3
Career Education & Experiential Learning	1
I consider myself a content-area expert in both categories	1

Table 2

Years of Experience: How many years have you been working in the content-area expert topic you selected in question 1?

Response	Count
0 - 2 Years	1
3 -5 Years	0
6 - 8 Years	0
9+ Years	4

Table 3

Previous Experience: Do you have previous experience constructing your own course alignment map for a course you have taught?

Response	Count
Yes	1
No	4
I am not sure	0

Demographic information shows the SMEs had experience in both career education and experiential learning as well as pre-health professions and exploration. Participants had a range

of previous experience within their content areas, from 0 - 2 years up to 9+ years, which allows for a diverse perspective and evaluation of the content. It was also beneficial to have SMEs with and without course alignment experience. Participants with course mapping experience provided an additional lens to their SME-focused responses whereas those without course-mapping experience could intentionally focus their responses on the content evaluation of the course map.

Data Analysis

After SMEs response data was downloaded to Microsoft Excel the Likert-scale responses were coded as either a positive response or a negative response. Likert responses were analyzed because the rating scale can be useful in "allowing us to treat responses as interval-level measures" (Harpe, 2015). Positive responses are defined as "1: Strongly Agree" or "2: Agree." Negative responses are defined as "4: Disagree" and "5: Strongly Disagree." The third option, "3: Neither Agree nor Disagree" was not calculated as positive or negative but is included as a response option because the "neutral option may increase the accuracy of survey data because respondents who do not have a strong preference" can select a neutral response instead of randomly selecting a response (Bulut, 2021).

If the average coded result for each individual question in Part 1 and Part 2 of the questionnaire receives a positive response rate of seventy-five percent or more the criteria was considered met. If the average result for the coded question is below seventy-five percent further analysis would need to be done on the topic area of the question and reference the written responses from participants to improve course analysis.

Responses to questions in Part 1: Alignment to Course Objectives and their respective Likert-scale responses are listed in Table 4.

Table 4

Part 1: Alignment to Course Objective Likert-Scale Questionnaire Responses

Questionnaire	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
1: Are the course objectives appropriate for the intended learners (mid-collegiate pre-health students)?	4	1	0	0	0
2: Are the module objectives aligned to the overarching course objectives?	3	2	0	0	0
4: Are the listed activities appropriate for the intended learners in this course?	3	2	0	0	0
5: Do the listed activities show diverse methods to educate learners (written response, open discussion, multiple opportunities to share thoughts, videos, etc.)?	3	2	0	0	0
6: Do the learning materials and activities include relevant real-world examples related to healthcare?	3	2	0	0	0
8: If completed fully, will the listed assessments show learners have achieved the module objectives?	3	2	0	0	0
9: Do you believe learners have multiple opportunities to show their knowledge and understanding of the material?	3	2	0	0	0
10: Do you believe there is enough diversity in kinds of assessment (formative, low-stakes, authentic, summative, etc.)?	3	2	0	0	0

Based on the SMEs responses all eight Likert-scale questions were ranked one-hundred percent positive with a response of “Strongly Agree” or “Agree.” All responses in Part 1:

Alignment to Course Objectives meet the benchmark set for each criterion to have a positive response rate of seventy-five percent or higher. SMEs had three opportunities to provide additional qualitative written responses during Part 1 of the questionnaire if any responded "Strongly Disagree" or "Disagree." Since no negatively coded responses were used by participants no additional information was required to improve course analysis.

Responses to questions in Part 2: Motivation and their respective Likert-scale responses are listed in Table 5.

Table 5

Part 2: Motivation Likert-Scale Questionnaire Responses

Questionnaire	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
1: Are strategies used to gain and maintain the learners attention (e.g., personal reflections, questions, critical thinking activities, relevant real-world examples)?	3	2	0	0	0
2: Is the instruction relevant for students interested in pre-health professions?	3	2	0	0	0
3: Are learners informed and convinced of the relevance to the pre-health professions through the course module content, activities, and assignments?	3	2	0	0	0
4: Are learners likely to be confident at the beginning of the course, and throughout the semester, that they can succeed?	2	2	1	0	0
5: Based on the information in the Course Planning and Action Map do you believe learners are likely to be	3	2	0	0	0

satisfied from the learning experience?

Based on the SME responses four of the five Likert-scale questions were ranked one-hundred percent positive with a response of “Strongly Agree” or “Agree.” Question four received four positively coded responses with one “Neither Agree nor Disagree" response. With an eighty percent positive response rate, the question still met the criteria, but additional attention was paid to the qualitative written response. One SME shared the following based on their neutral response: “*Something to consider is how will you make the activities, lessons, lectures, assignments, etc. relevant for ALL pre health students and not just pre-medical students? (so that non pre-med students will feel engaged).”* The participants’ feedback will be used to further improve the course and provide opportunities for improvement to course content. Integrated improvements are discussed further in recommendations.

Recommendations

Curricular Content

Although all Likert-questions surpassed the seventy-five percent positive response benchmark additional attention was afforded for the SME who shared a qualitative written response in part two of the questionnaire. To improve the Course Alignment Map and encourage motivation for all pre-health students some of the course content will be expanded. A few of the intentional changes to the course include the following:

- Module 1: Self-Assessment and Exploration: The original course map invited the Pre-Professional Advising Office (PPAC) to discuss the Medical School Application Process. To increase motivation for all students, particularly related to the perceived worth and perceived future usefulness of the content (Keller, 2016), the PPAC will share how to be

successful in the *Pre-Health* Application process instead of only the *Medical School* Application process. This will ensure the range of pre-health professions are supported instead of only pre-medicine students.

- Module 1: Self-Assessment and Exploration: A second change will be the invitation to professional school programs to speak on a competitive application. To increase the motivation for students this course content will include content for multiple healthcare professions. Instead of only one speaker from one program the session will transition to a panel where Admissions Representatives from multiple pre-health professions will be invited to speak and/or provide a recording of advice for students.
- Module 6: Multiple Paths to Success in Healthcare: A third change relates to the required documentary students must watch. In the original course map, there is only one documentary option identified which might not strongly connect to each healthcare profession. To increase learner choice students will have the option to select from five different documentaries for their assignment reflection. This will increase their motivation and connection to course content because learners have "preferences on specific learning methods or media that they may find more effective for them compared to others" (Keller, 2016).

Questionnaire Improvements

To improve the evaluation tool design changes can be implemented to the qualitative written responses in the questionnaire. In the original format qualitative responses encouraged reviewers to "share any additional comments to expand on your answers above" with the option to leave the question blank. A change would be to require a qualitative written response for each portion of the questionnaire. This would provide additional qualitative data on positive responses

and provide additional rationale on why a SME might respond “Agree” versus “Strongly Agree.” Understanding the reviewers’ thought process in more detail would be beneficial to the overall analysis of the course map.

Reflections

The PD2045 Course Planning and Alignment map was completed during the middle of my education within the Instructional Design and Technology Master’s program. While multiple concepts were utilized from early foundational courses it would be beneficial to integrate understandings developed during the final courses in the program.

While completing the evaluation process I found myself wishing I had more time to complete a more in-depth and robust analysis of the course. An increased number of responses, both from SMEs and the integration of student perspectives, would create a stronger course analysis opportunity in alignment with the ADDIE model.

For Subject Matter Expert responses, it would be beneficial to give professionals longer than two weeks to complete the questionnaire. An extended timeline would be particularly valuable if the questionnaire is requested during the middle of an academic semester. Considering the invited SMEs were faculty and staff at the University of Cincinnati the ideal timeline to provide feedback on a course would not be in the middle of a primary semester as was executed for this project. Additional capacity to genuinely dedicate time to providing course feedback could also increase the response rate from SMEs.

The inclusion of questionnaire responses from the intended learner for the course, mid-collegiate pre-health students at the University of Cincinnati, would also provide good insight into the motivational aspects of the course. The inclusion of learner feedback can “have the most impact on improving student learning” (Weston et al., 1997) which ties into the overall course

objectives. If the questionnaire was implemented again, with a longer data-gathering timeline than two weeks, I would include students who have previously completed PD2045 for their feedback. I would intentionally exclude students currently enrolled in PD2045 to avoid biased responses that might be influenced by an uneven power dynamic where students might base responses on a desire for a certain grade in the course.

Despite the reflections on how the evaluation process could be improved in the future, the analysis completed in IDT8130 provided valuable insight on the strengths and weaknesses of the CPAM. The evaluation process completed during the capstone course highlights the importance of how instruction should constantly evolve with the integration of evaluation tools.

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