Instructional Design

Why Knots!

This document serves as an analysis, design, and development of an instructional platform for the instructional design project. The “Why Knots?” design document utilizes the principles of the ADDIE model and Bloom’s Taxonomy. Instructional techniques are inclusive of cognitive, affective, and psychomotor principles of pedagogy. Students will be instructed with colorful, animated graphics depicting knot tying focusing on three project areas: (1) the purpose and need to learn knot-tying skills, (2) the demonstration and application of various knots and their appropriate use, and (3) the dextral capability of physically tying each knot and the creation of a fishing jig. Each learning goal and learning objective component are focused so that the student can see, hear, discuss, reinforce, and contemplate materials presented engagingly so each learner can demonstrate measurable mastery and learning.

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Table of Contents

Why Knots?

Design Model

The ADDIE model is a five-phase approach developed by the University of Florida for the military in 1970 as an outline to create effective instructional material and learning solutions for instructional designers and faculty (Instructional Designers of Penn State, n.d.). The sequential approach represented by the ADDIE acronym is Analyze, Design, Develop, Implement, and Evaluate. Each of the five phases in the model forms the design element of the "Why Knots?" instructional design document. Although other instructional design models are available for consideration, e.g., the 4CD/ID model, as noted by Khalil and Elkhider (2016), all instructional design modes contain some derivative iteration of the five elements included in the ADDIE model, which they also note is simpler and more straightforward in its implementation. For example a user centered design includes six elements within the process including: (1) initiate by defining the interaction, (2) investigate, (3) ideate by understanding users and prototype development, (4) adaptation, (5) reflection, and 6) evaluation (Garreta-Domingo et al., 2018).

The ADDIE design model begins with an investigation and assessment of the instructional goals with a specific intent to understand where a skill or knowledge is deficient and requires instruction. Once established, the organization of an instructional approach and a statement of the desired outcome envisioned are established. Consideration of who represents an audience for the instruction, their skill or experience level, and motivations are used to create informed decisions across the scope of the ADDIE project. Additionally, the procurement, assessment, and evaluation of required resources are undertaken within the context of delivery methods, and evaluative procedures are incorporated into the analysis.

With the completion of the analysis stage of the model, the process moves to the design phase which focuses on an appropriate learning solution aligned with objectives, strategies, and instructional goals. In the design phase, the establishment of clear paths is directed to create identifiable, sequentially modeled links between learning objectives and the instructional content. The design and implementation of a strategy for formative evaluations to assess the incremental progress of the learner's achievement toward the learning goal are conceived.

The development phase of the model is where learning resources, validation, prototyping, draft revisions, and pilot testing are conducted. Learning resources such as texts, syllabi, curriculum, assignments, learning modules, extracurricular activities, reading assignments, photos, hand-outs, PowerPoints, videos, timelines, job aid, et al., that comprise the resources required to create and "flesh out" the envisioned design scope of the course. This process is an iterative one, where respective evaluation, revision, and refinement of the design as it takes shape. The validation of the resources created in development is scrutinized by subject-matter experts and stakeholders, which contribute to the assessment of the product. The final component

and evaluation element is to prototype, and pilot test the instruction, making tweaks and edits as required.

When all parties are involved and satisfied with the development of the learning solution, the implementation stage of the model goes live. In the fourth stage of the design development process, the preparation of the classroom or online learning technology, the training of the instructor, the procurement of participants with appropriate enrollment, collection of tuition or fees if necessary, the accumulation of resources package and ready for distribution are all elements required to implement the learning solution by preparing the learning space, and engaging participant, both learning and facilitator.

The final stage of the ADDIE model, and the most important of all the stages, is the evaluation stage. It is here that both formative and summative evaluation of the instructional design project takes place. The formative evaluation, as mentioned in the development phase, is the fine-tuning process within the development of the instruction, and it is also utilized within the actual instruction to evaluate student progress. Most often, the formative assessment within the instruction is manifest as a test and grading system, but it can also be narrative, and considered a repetitive teaching technique and skill utilized daily in content delivery. The summative assessment is a different matter.

The summative evaluation is conducted after the instructional delivery. Generally, its purpose is to evaluate both the instructional product, the instructor, and the learner. As a three-phase evaluation, an assessment of the participant's perception of the course is the first undertaking. Then an assessment of the participants' level of learning is evaluated. The evaluation concludes with a performance evaluation to measure the transfer of knowledge and the learner's ability to apply the knowledge. Combined, the quality of the learning, the resources, and how the delivery accomplished or did not accomplish the instructional goal becomes a coalesced understanding directed toward reevaluation of the instructional design product. The fifth stage is also iterative in its purpose, looping back to the third stage of development for editing, adding and deleting, rebuilding, modifying, and correcting in preparation for the next implementation. The evaluation can also suggest that a return to phase 1 is warranted, and a complete re-analysis, design, and development needs to be considered.

Although a model is not the same as a theory (Andrew & Goodson, 1980), learning theory is an additional consideration for an instructional design, and the theoretical elements of Behaviorism (Watson, 1913), Cognitivism, and Constructivism (Inhelder & Piaget, 1958; Vygotsky, 1978) are applied within the design consideration of the "Why Knots?" instructional objectives. Behaviorism learning theory requires skill and demonstrated competency in new behavior, such as knot-typing as an end objective. The application of cognitive learning theory is applied with problem-solving practices and active participants in the learning process. The addition of constructive learning theory brings the learner and the instructional design together with collaborative learning, and reflective practices of collaborative knowledge construction.

The influence of Bloom and Krathwohl's (1956) Taxonomy of Educational Objectives on the development of learning objectives, when applied to instructional design, supplies a structure and vocabulary to developmental design thinking. The three domains of learning, (1) cognitive or knowledge, (2) affective or attitudes, and (3) psychomotor or skills, each with its attributions, are used within the hierarchy to direct the learning process (Hoque, 2016). Anderson (1999) and

Krathwohl (2002) revised Bloom and Krathwohl's (1956) taxonomy, and although similar in structure to the earlier taxonomy, Bloom himself recognized weaknesses in the original design (Wilson, 2016). The revised taxonomy, i.e., Remember, Understand, Apply, Analyze, Evaluate, and Create, is applied in the instructional design with the appropriate learning objective verbs instead of the original Bloom nouns.

Although the scope of the audience of focus (Baaki et al., 2023) is presumed to be adult persons and the principles of instruction are directed toward andragogy, the instructional design is adjustable to a pedagogical delivery as well as a foundational introduction and catalysis to heutagogy (Kenyon & Hase, 2001). Optimally, the application of the theory and creation of a community of inquiry incorporating the overlapping of social, cognitive, and instructor presence will add a dimension to a continued value within the design and value to the audience (The Community of Inquiry, 2024).

Analysis

Purpose: There is something about fishing that attracts millions of people to pursue the creature that resides in water. According to the American Sportfishing Association in America, 52.4 million anglers contribute $148 billion to the economy, an economic force contributing to industry, business, and for others recreation and the outdoors (Stillwagon, 2023). Fishing, for some anglers, becomes more than just a hobby, but an obsessive and passionate pursuit of a personal best trophy catch, where the investment of hundreds of thousands of dollars is expensed. Additionally, it is an activity that provides nourishment to millions around the world where hunger for protein in the diet drives the activity. There is a wealth of information available across the Internet, printed in books, and produced television series of fishing personalities searching the rivers, streams, oceans, and ponds for a particular species or monster fish. From a behaviorist perspective it is operant conditioning manifests as a rewarding experience dripping with dopamine, creating an obsession to do it again and again. In the fisherman's mind, the next catch may be bigger than the last, and the one that got away is waiting to be caught again.

The problem addressed in this instruction of knot-tying has its basis in the lack of skill and understanding of the most fundamental knowledge required in the successful catching of fish: Tying the hook, lure, swivel, and weight to the line used when fishing. From observation and discussion with experienced fisherman, it is noted that only a small number of knots are actually known to them, and they generally use only one or two as their tried and true go-to knots; however, there exist better and specific choices for their application, purpose, and intended species unknown to them. The difference between the story of how the big one got away and the landed fish displayed in the photograph is the strength of the knot.

Instructional Goals: The instructional goal for this instruction is to assist anglers with the basic knots needed to effectively secure their fishing line to a hook, lure, or another line or to construct fishing rigs. Specifically, to (1) fully understand the need to learn knot-tying skills, (2) to demonstrate and apply various knots and know the correct and appropriate use of each knot,

and (3) physically tie each knot, replicate the knot on demand, and use it effectively in the practice of fishing.

TAPF: The topic, audience, purpose, and format of this instructional design document are listed below in detail. The creation of this document follows the ADDIE format and Bloom's Taxonomy of learning goals and learning objectives. The scope of the instructional document is inclusive of learning expectations, course and lesson components, instructional activities, and assessment and evaluation criteria for the delivery of courseware material.

Topic: The topic of the instruction is knots used in the practice of fishing.

Audience: The audience for this instruction is individuals who enjoy, have an interest in, or participate in the practice of catching fish with a hook and line secured with a knot. The audience has no gender, age, or experience level requirement; however, a level of novice or beginner is preferable.

Purpose: The purpose of the instruction is to engage learners in (1) the purpose and need to learn appropriate knot-tying skills for fishing, (2) the demonstration and application of various knots and their appropriate use in fishing, and (3) demonstrate the dextral capability of knot-tying skills for fishing. The elements of cognitive, assistive, and psychomotor learning activities are incorporated throughout each of the three sections.

Format: The method of delivery is online and presented as a video via Zoom. The curriculum delivery will be scheduled as required. The time frame needed for the delivery is three hours.

Required Resources: A number of varied materials are required for the presentation of the instruction. The book entitled "The Complete Book of Fishing Knots, Leaders, and Lines by Linsey Philpott (2008) in hardcover or the e-book edited and revised in 2015 will be the reference textbook for the course. Both instructor and learner will require a 6" eye-bolt and a length of cordage of a diameter of 3/8 inch measuring 18 inches. Additionally, a length of 20-pound monofilament fishing line and a length of 30-pound braided fishing line will be required, along with two # 5 single steel J- hooks, two-barrel swivels, two three-way swivels, and a one-ounce barrel lead weight.

The instructor will also require appropriately constructed presentation material and demonstration props along with the mentioned above. Additionally, the instructor will require a Zoom account and the appropriate equipment to present the presentation online.

Activities: A survey of ten people fishing at the 61st Street fishing pier in Galveston, Texas, indicated that a variety of basic knot-tying skills are required as a minimum for successful beginner anglers. The specific knots chosen and skills to be accomplished to address any deficiency of skill and lack of knowledge are:

- The Improved Clinch Knot
- The Palomar Knot
- The Snelling of a hook
- The Mono Loop knot

- The Perfection Loop knot
- The Blood knot
- The Dropper Rig
- The Fish-Finder Rig

Evaluation: Formative assessments are required to evaluate the progress of each learner and evaluate the effectiveness of each lesson's accomplishment of the learning objective and the overall learning goal of the instruction. A summative evaluation is needed to ascertain the course as a whole instructional experience from two points of view: The instructor and the learners.

Design

Course Goal: To assist the learner with the basic knots needed to effectively secure their fishing line to a hook, lure, or another line and to construct a fishing rig.

Course Objectives:

- To fully understand the need to learn knot-tying skills.
- To demonstrate and apply various knots and know the correct and appropriate use of each knot.
- To have the ability to physically tie each knot, replicate the knot on demand, and use it effectively in the manufacture of fishing rigs.

Learning Goals

Goal 1: The learner will be able to understand the vocabulary of knots, the various types of fishing lines, how knots work, and what not to do when tying fishing knots.

Goal 2: The learner will be able to understand and tie an Improved Clinch Knot, a Palomar Knot, how to Snell a hook, tie a blood knot, tie a Mono Loop Knot, and tie a Perfection Loop knot.

Goal 3: The learner will be able to understand, create, and tie a Dropper Loop fishing rig and a Fish-Finder fishing rig.

Learning Objectives

1. **The learner will be able to understand the need to learn knot-typing skills used in fishing.**

(cognitive, affective, psychomotor).

1.1 By the end of a series of lessons, the learner will be able to recognize 80% of the reasons why they need to know about fishing knots. (cognitive).

1.2 By the end of a series of lessons, the learner will be able to distinguish between lines used in fishing (cognitive).

1.3 By the end of a series of lessons, the learner will be able to express the vocabulary of knots. (cognitive).

1.4 By the end of a series of lessons, the learner will be able to characterize the value of a well-tied fishing knot as measured by the learner's participation (cognitive).

1.5 By the end of a series of lessons, the learner will be able to compare and contrast various fishing materials and knots (cognitive).

1.6 By the end of a series of lessons, the learner will be able to incorporate the material, knowledge, and value of a well-tied fishing knot 80% of the time as measured by an evaluation of learning (cognitive, affective).

2. **The learner will be able to tie various knots and know the correct and appropriate use for each knot for fishing (cognitive, affective, psychomotor).**

2.1 By the end of a series of lessons, the learners will identify the materials required and use them to tie an appropriate fishing knot (cognitive, psychomotor).

2.2 By the end of a series of lessons, the learners will describe the possible choices of materials required and used to tie an appropriate fishing knot (cognitive).

2.3 By the end of a series of lessons, the learner will be able to apply various materials required and used to tie an appropriate fishing knot (cognitive, affective).

2.4 By the end of a series of lessons, the learner will differentiate between their choices of the materials required and used to tie an appropriate fishing knot, with 80% success measured by correctly tying each fishing knot (affective, psychomotor).

2.5 By the end of a series of lessons, the learner will be able to evaluate the selected materials and their knot-tying skills (psychomotor).

2.6 By the end of a series of lessons, the learner will be able to use the materials and improve their knot-tying skills with continued practice (psychomotor).

3. **The learner will be able to demonstrate the dextral capability of knot-tying skills for fishing (cognitive, affective, psychomotor).**

3.1 By the end of a series of lessons, the learner will be able to recognize examples of the various fishing knots by name with 100% accuracy (cognitive).

3.2 By the end of a series of lessons, the learner will be able to discuss the correct usage of knots used for fishing when asked to identify illustrations of each knot with 80% accuracy (cognitive, affective).

3.3 By the end of a series of lessons, the learner will be able to construct the correct tying of a single-hook knot used for fishing with 100% accuracy (cognitive, psychomotor).

3.4 By the end of a series of lessons, the learner will be able to illustrate a plan for the design of a two-hook fishing rig with the appropriate fishing knots, as demonstrated by the creation of a design drawing (affective, psychomotor).

3.5 By the end of a series of lessons, the learner will be able to justify the design of a two-hook fishing rig (cognitive, affective).

3.6 By the end of a series of lessons, the learner will create a two-hook fishing rig (affective, psychomotor).

Lesson Components for the Learner

Lesson 1: Knot-tying skills used in fishing.

Subject 1: What you need to know.

a. The learner will be presented with an overview of knot terminology.
b. The learner will be presented with an overview of how knots work.
c. The learner will be presented and discuss how to work with a line.
d. The learner will learn how to finish the line.
e. The learner will learn what not to do with an emphasis on improper usage.

Subject 2: Fishing line

a. The learner will learn about the monofilament line.
b. The learner will learn about braided lines.
c. The learner will learn about the fluorocarbon line.

Lesson 2: Learning to tie various fishing knots.

Subject 1: Knots you need to know.

a. The learner will be shown, through illustration and demonstration, the process and procedure for the Improved Clinch Knot.

b. The learner will select practice cordage and eye-bolt to practice along with instruction on the Improved Clinch Knot.
c. The learner will be shown, through illustration and demonstration, the process and procedure for the Palomar Knot.
d. The learner will select practice cordage and eye-bolt to practice along with instruction on the Palomar Knot.
e. The learner will be shown, through illustration and demonstration, the process and procedure for Snelling a hook.
f. The learner will select practice cordage and eye-bolt to practice along with instruction of Snelling a hook.

Subject 2: Loop knots**.**

a. The learner will be shown, through illustration and demonstration, the process and procedure for the Mono Loop.
b. The learner will select practice cordage and eye-bolt to practice along with instruction of Mono Loop.
c. The learner will be shown, through illustration and demonstration, the process and procedure for the Perfection Loop.
d. The learner will select practice cordage and eye-bolt to practice along with instruction on the Perfection Loop.

Subject 3: Line to line knots**.**

a. The learner will be shown, through illustration and demonstration, the process and procedure for connecting two lines with the Blood Knot.
b. The learner will select practice cordage to practice along with instructions for connecting two lines with the Blood Knot.

Subject 4: Building terminal rigs.

a. The learner will be shown, through illustration and demonstration, the process and procedure for the creation of a Dropper Loop fishing rig.
b. The learner will be shown, through illustration and demonstration, the process and procedure for the creation of a Fish-Finder Rig.
c.

Lesson 3: Demonstrate the capability of knot-tying skills for fishing.

Subject 1: Fishing Rig

a. The learner will draw out the design for a Dropper Loop fishing rig.
b. The learner will select the appropriate hardware, i.e., swivels, hook, line, and sinker, to construct the Dropper Loop fishing rig as designed.
c. The learner will draw out the design for a Fish-Finder fishing rig.
d. The learner will select the appropriate hardware, i.e., swivels, hook, line, and sinker, to construct the Fish-Finder fishing rig as designed.

e. The learner will describe design choices, their challenges, successes, and failures.

Lesson Components for the Instructor

Lesson 1: Presentation and discussion of fishing knot-tying skills

Subject 1: What the learner needs to know.

a. The instructor will present a lesson on knot terminology.

b. The instructor will present a lesson on how knots work.

c. The instructor will present a lesson and encourage a discussion of how to work with line.

d. The instructor will present a lesson on how to finish the line.

e. The instructor will present a lesson on what not to do with an emphasis on improper usage.

Subject 2: Fishing line

a. The instructor will present a lesson about monofilament lines.

b. The instructor will present a lesson about braided lines.

c. The instructor will present a lesson about fluorocarbon lines.

d. The instructor will encourage a discussion of the fishing line and encourage questions and ask questions.

Lesson 2: Learning to tie various knots.

Subject 1: Knots you need to know.

a. The instructor will present through illustration and demonstration the process and procedure for the Improve Clinch Knot.

b. The instructor will guide the selection of practice cordage and the eye-bolt to guide the learner to practice along with a step-by-step instruction of the Improved Clinch Knot.

c. The instructor will present, through illustration and demonstration, the process and procedure for the Palomar Knot.

d. The instructor will guide the selection of practice cordage and the eye-bolt to guide the learner to practice along with a step-by-step instruction of the Palomar Knot.

e. The instructor will present through illustration and demonstration the process and procedure for Snelling a hook.

f. The instructor will guide the selection of practice cordage and the eye-bolt to guide the learner to practice along with step-by-step instructions for Snelling a hook.

Subject 2: Loops knots.

a. The instructor will present through illustration and demonstration the process and procedure for the Mono Loop knot.

b. The instructor will guide the selection of practice cordage and the eye-bolt to guide the learner to practice along with step-by-step instruction on the Mono Loop knot.

c. The instructor will present through illustration and demonstration the process and procedure for the Perfection Loop knot.

d. The instructor will guide the selection of practice cordage and the eye-bolt to guide the learner to practice along with step-by-step instruction on the Perfection Loop knot.

Subject 3: Line to line knots.

a. The instructor will present through illustration and demonstration the process and procedure for connecting two lines with the Blood Knot.

b. The instructor will guide the selection of practice cordage to guide the learner to practice along with a step-by-step instruction of connecting two lines with the Blood Knot.

Subject 4: Building terminal rigs.

a. The instructor will present through illustration and demonstration the process and procedure for the creation of a Dropper Loop fishing rig.

b. The instructor will guide the learner to practice along with step-by-step instructions for creating and manufacturing a Dropper Loop fishing rig.

c. The instructor will present through illustration and demonstration the process and procedure for the creation of a Fish-Finder Rig.

d. The instructor will guide the learner to practice along with step-by-step instructions for creating and manufacturing a Fish-Finder rig.

Lesson 3: Fishing Rigs

Subject 1: Dropper Loop Fishing Rig

a. The instructor will guide the learners to plan out and draw their design for a Dropper Loop fishing rig.

b. The instructor will guide the learner with the selection of the appropriate hardware, i.e., swivels, hook, line, and sinker to construct the Dropper Loop fishing rig as designed.

c. The instructor will oversee the learner's manufacture of a Dropper Loop fishing rig as designed.

Subject 2: Fish-Finder Fishing Rig

a. The instructor will guide the learner to plan out and draw their design for a Fish-Finder fishing rig.

b. The instructor will guide the learner with the selection of the appropriate hardware, i.e., swivels, hook, line, and sinker to construct the Fish-Finder fishing rig as designed.

c. The instructor will oversee the learner's manufacture of a Fish-Finder fishing rig as designed.

Lesson 4: Review and Evaluation

a. The instructor will review the course content, soliciting questions as the instructor moves from the subject lessons presented asking questions for review and discussion.

b. At the conclusion of the class, the instructor will direct learners to an online summative survey questionnaire to evaluate the students' perceptions of the course and the instruction, evaluate the learning achieved by the learner, and evaluate the performance of the learner's achievement and fishing knot tying skills.

Assessment: Before delivery, the instructor will be counseled on the correct delivery sequence and provided visual materials. By direct observation by the instructor of the undertaken instructional delivery, an assessment will be made of the learner's understanding of materials, and the learner's ability to follow direction. The instructor will assess delivery components with a Rubric to collect data and create statistical percentages of learning goals as outlined in the learning goals and objectives for each of the three sections. Survey questions and Rubric for each section will be located in the Appendix of this document. Successful learning will be determined if : (1.) the learner is able to use the vocabulary of knots, can identify types and application of line types, and understand the need for knot-tying skills; (2.) the learner is able to tie the

appropriate knots presented in the lesson and understand their specific usage, and (3.) the learners are able to create and complete the manufacture of fishing rigs.

Evaluation: The evaluative process is listed below for each of the three areas of instructional focus. Evaluation of the instructional delivery is directed to observe, record, and determine the success or failure of the design.

1. Learning Goal #1 Objective 1.1 ~ 1.6: The curriculum design and materials will be evaluated by observing the learner's participation, attitude, and understanding of the lessons presented. Learning will be deemed successful, with 80% accuracy as measured on the Rubric.

2. Learning Goal # 2 Objective 2.1 ~ 2.6: The participation of the learner in the knot-tying lessons will be evaluated by the completion of each knot presented. If the instruction has been followed and the results measurable, then the learning goal will be considered successful with 80% accuracy as measured on the Rubric.

3. Learning Goal #3: Objective 3.1 ~ 3.6: The creation of a fishing rig will be considered successfully learned if a majority of learners can complete the project with 80% accuracy as measured on the Rubric.

Timeline: The tentative timeline for the delivery of lessons will be 3 hours with thirty minutes allocated to lesson 1, one hour and thirty minutes for lesson 2, and one hour for lesson 3. It will be delivered in three lessons as outlined in the Course/Lesson Goals and Objectives contained herein.

Development

Lesson 1: Presentation of fishing knot-tying skills

PowerPoint Slide Presentation

Goal 1: The learner will be able to understand the vocabulary of knots, the various types of fishing lines, how knots work, and what not to do when tying fishing knots.

Subject 1: What the learner needs to know.

a. The instructor will present a lesson on knot terminology.

b. The instructor will present a lesson on how knots work.

c. The instructor will present a lesson and encourage a discussion of how to work with a line.

d. The instructor will present a lesson on how to finish the line.

e. The instructor will present a lesson on what not to do with an emphasis on improper usage.

Subject 2: Fishing line

a. The instructor will present a lesson about monofilament lines.

b. The instructor will present a lesson about braided lines.

c. The instructor will present a lesson about fluorocarbon lines.

d. The instruction will encourage a discussion of the fishing line and encourage questions and ask questions.

Formative Assessment of Learning Rubric (See Appendix A)

Lesson 2: Learning to Tie Fishing Knots

PowerPoint Slide Presentation

Goal 2: The learner will be able to understand and tie an Improved Clinch Knot, a Palomar Knot, how to Snell a hook, tie a blood knot, tie a Mono Loop Knot, and tie a Perfection Loop knot.

Subject 1: Knots you need to know.

a. The instructor will present through illustration and demonstration the process and procedure for the Improve Clinch Knot.

b. The instructor will guide the selection of practice cordage and the eye-bolt to guide the learner to practice along with a step-by-step instruction of the Improved Clinch Knot.

c. The instructor will present, through illustration and demonstration, the process and procedure for the Palomar Knot.

d. The instructor will guide the selection of practice cordage and the eye-bolt to guide the learner to practice along with a step-by-step instruction of the Palomar Knot.

e. The instructor will present through illustration and demonstration the process and procedure for Snelling a hook.

f. The instructor will guide the selection of practice cordage and the eye-bolt to guide the learner to practice along with step-by-step instructions for Snelling a hook.

Subject 2: Loops knots.

a. The instructor will present through illustration and demonstration the process and procedure for the Mono Loop knot.

b. The instructor will guide the selection of practice cordage and the eye-bolt to guide the learner to practice along with step-by-step instruction on the Mono Loop knot.

c. The instructor will present through illustration and demonstration the process and procedure for the Perfection Loop knot.

d. The instructor will guide the selection of practice cordage and the eye-bolt to guide the learner to practice along with step-by-step instruction on the Perfection Loop knot.

Subject 3: Line to line knots.

a. The instructor will present through illustration and demonstration the process and procedure for connecting two lines with the Blood Knot.

b. The instructor will guide the selection of practice cordage to guide the learner to practice along with a step-by-step instruction of connecting two lines with the Blood Knot.

Formative Assessment of Learning Rubric (See Appendix B)

Lesson 3: Fishing Rigs

PowerPoint Slide Presentation

Goal 3: The learner will be able to understand, create, and tie a Dropper Loop fishing rig and a Fish-Finder fishing rig.

Subject 1: Dropper Loop Fishing Rig

a. The instructor will guide the learners to plan out and draw their e design for a Dropper Loop fishing rig.

b. The instructor will guide the learner with the selection of the appropriate hardware, i.e., swivels, hook, line, and sinker to construct the Dropper Loop fishing rig as designed.

c. The instructor will oversee the learner's manufacture of a Dropper Loop fishing rig as designed.

Subject 2: Fish-Finder Fishing Rig

a. The instructor will guide the learner to plan out and draw their e design for a Fish-Finder fishing rig.

b. The instructor will guide the learner with the selection of the appropriate hardware, i.e., swivels, hook, line, and sinker to construct the Fish-Finder fishing rig as designed.

c. The instructor will oversee the learner's manufacture of a Fish-Finder fishing rig as designed.

Formative Assessment of Learning Rubric (See Appendix C)

Lesson 4: Review and Evaluation

PowerPoint Slide Presentation

a. The instructor will review the course content, soliciting questions as the instructor moves from the subject lessons presented, asking questions for review and discussion.

b. At the conclusion of the class, the instructor will direct learners to an online summative survey questionnaire to evaluate the students' perceptions of the course and the instruction, evaluate the learning achieved by the learner, and evaluate the performance of the learner's achievement and fishing knot tying skills.

Summative Assessment of Learning (See Appendix D)

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Appendix A
Lesson 1 Rubric ~ Formative evaluative scoring for each student

	Exceptional	Above Average	Below Average	Unacceptable
Goals & Objectives	**Goal:** The learner will be able to understand the need to learn knot-typing skills used in fishing. (cognitive, affective, psychomotor). **Objectives:** 1.1 By the end of a series of lessons, the learner will be able to recognize 80% of the reasons why they need to know about fishing knots. 1.2 By the end of a series of lessons, the learner will be able to distinguish between lines used in fishing. 1.3 By the end of a series of lessons, the learner will be able to express the vocabulary of knots. 1.4 By the end of a series of lessons, the learner will be able to characterize the value of a well-tied fishing knot as measured by the learner's participation. 1.5 By the end of a series of lessons, the learner will be able to compare and contrast various fishing materials and knots. 1.6 By the end of a series of lessons, the learner will be able to incorporate the material, knowledge, and value of a well-tied fishing knot 80% of the time as measured by an evaluation of learning.			
	(5)	(3.25)	(1.75)	(0)
Objective 1.1	The student is able to recognize reasons why they need to know about fishing knots with 80% accuracy.	The student is able to recognize reasons why they need to know about fishing knots with 50% accuracy.	The student is able to recognize reasons why they need to know about fishing knots, with 25% accuracy.	The student is able to recognize reasons why they need to know about fishing knots with 0% accuracy.
Objective 1.2	The student is able to distinguish between lines used in fishing with 80% accuracy.	The student is able to distinguish between lines used in fishing with 50% accuracy.	The student is able to distinguish between lines used in fishing with 25% accuracy.	The student is able to distinguish between lines used in fishing with 0% accuracy.
Objective 1.3	The student is able to express the vocabulary of knots with 80% accuracy.	The student is able to express the vocabulary of knots with 80% accuracy.	The student is able to express the vocabulary of knots with 80% accuracy.	The student is able to express the vocabulary of knots with 80% accuracy.

Objective 1.4	The student is able to characterize the value of a well-tied fishing knot with 80% participation.	The student is able to characterize the value of a well-tied fishing knot with 80% participation.	The student is able to characterize the value of a well-tied fishing knot with 80% participation.	The student is able to characterize the value of a well-tied fishing knot with 80% participation.
Objective 1.5	The student is able to compare and contrast various fishing materials and knots with 80% accuracy.	The student is able to compare and contrast various fishing materials and knots with 80% accuracy.	The student is able to compare and contrast various fishing materials and knots with 80% accuracy.	The student is able to compare and contrast various fishing materials and knots with 80% accuracy.
Objective 1.6	The student is able to incorporate the material, knowledge, and value of a well-tied fishing knot with 80% accuracy.	The student is able to incorporate the material, knowledge, and value of a well-tied fishing knot with 580% accuracy.	The student is able to incorporate the material, knowledge, and value of a well-tied fishing knot with 25% accuracy.	The student is able to incorporate the material, knowledge, and value of a well-tied fishing knot with 0% accuracy.

Appendix B

Lesson 2 Rubric ~ Formative evaluative scoring for each student

	Exceptional	Above Average	Below Average	Unacceptable
Goals & Objectives	**Goal:** The learner will be able to understand and tie an Improved Clinch Knot, a Palomar Knot, how to Snell a Hook, tie a Blood Knot, tie a Mono Loop Knot, and tie a Perfection Loop knot. **Objectives:** 2.1 By the end of a series of lessons, the learners will identify the materials required and use them to tie an appropriate fishing knot. 2.2 By the end of a series of lessons, the learners will describe the possible choices of materials required and used to tie an appropriate fishing knot. 2.3 By the end of a series of lessons, the learner will be able to apply various materials required and used to tie an appropriate fishing knot. 2.4 By the end of a series of lessons, the learner will differentiate between their choices of the materials required and used to tie an appropriate fishing knot, with 80% success measured by correctly tying each fishing knot. 2.5 By the end of a series of lessons, the learner will be able to evaluate the selected materials and their knot-tying skills). 2.6 By the end of a series of lessons, the learner will be able to use the materials and improve their knot-tying skills with continued practice (psychomotor).			
	(5)	(3.25)	(1.75)	(0)
Objective 2.1	The student is able to identify the materials required and used to tie an appropriate fishing knot with 80% accuracy.	The student is able to identify the materials required and used to tie an appropriate fishing knot with 50% accuracy.	The student is able to identify the materials required and used to tie an appropriate fishing knot with 25% accuracy.	The student is able to identify the materials required and used to tie an appropriate fishing knot with 0% accuracy.
Objective 2.2	The student is able to describe the possible choices of materials required and used to tie an appropriate fishing knot with 80% accuracy,	The student is able to describe the possible choices of materials required and used to tie an appropriate fishing knot with 50% accuracy,	The student is able to describe the possible choices of materials required and used to tie an appropriate fishing knot with 25% accuracy,	The student is able to describe the possible choices of materials required and used to tie an appropriate fishing knot with 0% accuracy,

Objective 2.3	The student is able to apply various materials required and used to tie an appropriate fishing knot with 80% accuracy.	The student is able to apply various materials required and used to tie an appropriate fishing knot with 580% accuracy.	The student is able to apply various materials required and used to tie an appropriate fishing knot with 25% accuracy.	The student is able to apply various materials required and used to tie an appropriate fishing knot with 0% accuracy.
Objective 2.4	The student is able to differentiate between their choices of the materials required and used to tie an appropriate fishing knot with 80% accuracy.	The student is able to differentiate between their choices of the materials required and used to tie an appropriate fishing knot with 50% accuracy.	The student is able to differentiate between their choices of the materials required and used to tie an appropriate fishing knot with 25% accuracy.	The student is able to differentiate between their choices of the materials required and used to tie an appropriate fishing knot with 0% accuracy.
Objective 2.5	The student is able to evaluate the selected materials and their knot-tying skills with 80% accuracy.	The student is able to evaluate the selected materials and their knot-tying skills with 50% accuracy.	The student is able to evaluate the selected materials and their knot-tying skills with 25% accuracy.	The student is able to evaluate the selected materials and their knot-tying skills with 0% accuracy.
Objective 2.6	The student is able to use the materials and improve their knot-tying skills with continued practice with 80% accuracy.	The student is able to use the materials and improve their knot-tying skills with continued practice with 50% accuracy.	The student is able to use the materials and improve their knot-tying skills with continued practice with 25% accuracy.	The student is able to use the materials and improve their knot-tying skills with continued practice with 0% accuracy.

Appendix C
Lesson 3 Rubric ~ Formative evaluative scoring for each student

	Exceptional	Above Average	Below Average	Unacceptable
Goals & Objectives	**Goal:** The learner will be able to understand, create, and tie a Dropper Loop fishing rig and a Fish-Finder fishing rig. **Objectives:** 3.1 By the end of a series of lessons, the learner will be able to recognize examples of the various fishing knots by name with 100% accuracy (cognitive). 3.2 By the end of a series of lessons, the learner will be able to discuss the correct usage of knots used for fishing when asked to identify illustrations of each knot with 80% accuracy (cognitive, affective). 3.3 By the end of a series of lessons, the learner will be able to construct the correct tying of a single-hook knot used for fishing with 100% accuracy (cognitive, psychomotor). 3.4 By the end of a series of lessons, the learner will be able to illustrate a plan for the design of a two-hook fishing rig with the appropriate fishing knots, as demonstrated by the creation of a design drawing (affective, psychomotor). 3.5 By the end of a series of lessons, the learner will be able to justify the design of a two-hook fishing rig (cognitive, affective). 3.6 By the end of a series of lessons, the learner will create a two-hook fishing rig (affective, psychomotor).			
	(5)	(3.25)	(1.75)	(0)
Objective 3.1	The student is able to recognize examples of the various fishing knots by name with 80% accuracy.	The student is able to recognize examples of the various fishing knots by name with 50% accuracy.	The student is able to recognize examples of the various fishing knots by name with 25% accuracy.	The student is able to recognize examples of the various fishing knots by name with 0% accuracy.
Objective 3.2	The student is able to discuss the correct usage of knots used for fishing when asked to identify illustrations of each knot with 80% accuracy.	The student is able to discuss the correct usage of knots used for fishing when asked to identify illustrations of each knot with 50% accuracy.	The student is able to discuss the correct usage of knots used for fishing when asked to identify illustrations of each knot with 25% accuracy.	The student is able to discuss the correct usage of knots used for fishing when asked to identify illustrations of each knot with 0% accuracy.
Objective 3.3	The student is able to construct	The student is able to construct	The student is able to construct	The student is able to construct

	the correct tying of a single-hook knot used for fishing with 80% accuracy.	the correct tying of a single- hook knot used for fishing with 580% accuracy.	the correct tying of a single-hook knot used for fishing with 25% accuracy.	the correct tying of a single- hook knot used for fishing with 0% accuracy.
Objective 3.4	The student is able to illustrate a plan for the design of a two-hook fishing rig with the appropriate fishing knots, as demonstrated by the creation of a design drawing with 80 % accuracy.	The student is able to illustrate a plan for the design of a two-hook fishing rig with the appropriate fishing knots, as demonstrated by the creation of a design drawing with 50 % accuracy.	The student is able to illustrate a plan for the design of a two-hook fishing rig with the appropriate fishing knots, as demonstrated by the creation of a design drawing with 25 % accuracy.	The student is able to illustrate a plan for the design of a two-hook fishing rig with the appropriate fishing knots, as demonstrated by the creation of a design drawing with 0 % accuracy.
Objective 3.5	The student is able to justify the design of a two-hook fishing rig with 80% accuracy.	The student is able to justify the design of a two-hook fishing rig with 80% accuracy.	The student is able to justify the design of a two-hook fishing rig with 80% accuracy.	The student is able to justify the design of a two-hook fishing rig with 80% accuracy.
Objective 3.6	The student is able to create a two-hook fishing rig with 80% accuracy.	The student is able to create a two-hook fishing rig with 50% accuracy.	The student is able to create a two-hook fishing rig with 25% accuracy.	The student is able to create a two-hook fishing rig with 0% accuracy.

Appendix D

Summative Evaluation

Upon completion of the delivery, the instructor will be questioned with the intent to discover the value of materials and delivery flow.

1. Question: In your opinion, rate from 1 to 5 how useful the PowerPoint presentation is in your understanding of how to tie fishing knots and make fishing rigs?

Not Useful	Not too Useful	Useful	Somewhat Useful	Very Useful
1	2	3	4	5

2. Question: In your opinion, rate from 1 to 5 how valuable the visual material and practice line and eye-hook were for the comprehension of each section.

No Value	Not too Valuable	Valuable	Somewhat Valuable	Very Valuable
1	2	3	4	5

Upon completion of delivery, the instructor will be questioned with the intent to ascertain the success and failure of the materials.

3. Question: Now that the class is concluded, rate from 1 to 5; overall, how successful was the use of the materials in the classroom.

Not Successful	Not Very Successful	Successful	Somewhat Successful	Very Successful
1	2	3	4	5

4. Question: Do you believe that your learning goals were achieved?

Not Achieved	Marginally Achieved	Achieved	Mostly Achieved	Highly Achieved
1	2	3	4	5

5. Question: Rating from 1 to 5, in your opinion, was the class an overall success or failure?

100% Failure	75% Failure 25% Success	50% Success 50% Failure	75% Success 25% Failure	100% Success
1	2	3	4	5

Upon completion of delivery, the instructor will be questioned with the intent to get the instructor's opinion and insight into the design development process.

6. Question: Initially, during the analysis, a few areas of instructional concerns were addressed, such as exposure to fishing knots and novices e students, and the lack was a matter of concern. What, in your opinion, was the value of the instructional design process toward successfully solving the problems initially identified?

No Value	Not Very Valuable	Valuable	Somewhat Valuable	Very Valuable
1	2	3	4	5

7. Question: Based on your subjective opinion, what made the design useful or not useful? Why?

_____
_____
_____
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