Running Head: Getting Ready (design)

Project 2: Procedure Learning – Design Document

Getting Ready for Your Workout

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Overview

This team is developing a "Getting Ready for Your Workout" course to cover procedures for completing a flexibility warm-up before general fitness cardio or weight-lifting exercises.

Cheetah Gyms, a three-gym chain in Chicago, IL, will use the class and accompanying materials as part of a series of classes on exercise fundamentals to be taught at their locations in the Andersonville and Edgewater neighborhoods. The marketing and design of the courses targets new gym members with no or limited skills.

Objectives & Assessment

Overall Goal of Instruction & Supporting Objectives

The overall goal of instruction is to ensure that all learners are able to safely complete a five-exercise flexibility warm-up on their own. As part of teaching this warm-up procedure, we will teach students both general guidelines for stretching safely and will teach them five flexibility moves: neck stretch, shoulder rolls, arm circles, lower-body twist, and sumo squat and stretch.

Toward the goal of ensuring learners are able to complete a flexibility warm-up on their own, our team has established the following psychomotor procedure outcome:

- Learners can perform each of the indicated flexibility exercises

In addition, in order to ensure that the learners can perform the five exercises safely and effectively, we have identified the following objectives related to cognitive principles, which are used to guide performance of and provide inputs for one or more of the five exercises:

- Avoid overextending a stretch by monitoring pain or discomfort

- Avoid fatigue while warming up by using the exertion index

Finally, our team has also identified the following affective, attitudinal outcome for instruction:

- Feel comfortable warming up on their own

Assessment of Learning

There are specific types of assessment that are appropriate to the instructional framework of a gym. Specifically, the gym does not allow any exercise instructor to conduct any form of formal "testing" in a one-session, beginner course so as not to put stress on learners. This means assessment strategies must be innocuous, rely heavily on instructor observation, and be embedded within the instructional strategies. Assessment strategies that are appropriate to the context include:

- Observing performance of procedural knowledge

- Group repetition of declarative knowledge (principles) that guide the performance of the procedural knowledge

The affective objective is more long-range and will be assessed by observing increases in the number of gym members using this five-exercise warm-up procedure.

Motivational Strategies

As discussed by Keller (1983), "The assumption all too often has been that if instruction is of good quality, motivation will take care of itself. Unfortunately, this assumption has been found to be only partly true… People tend to persist longer, or more intensely for a shorter period, at tasks which they are motivated than when they

are not." (p.388)

Motivating the learner to participate and complete warm-up exercises using correct form will require varied strategies. These include instructor demonstration, instructor support that encourages the correct performance but does not embarrass the learner, the availability of illustrated supporting materials, and respect for the learner's ability to reuse knowledge and apply a step learned in one exercise to a subsequent exercise that repeats the step. The performance of the repeated step is best supported by a reminder by the instructor instead of the entire set of instructions.

Our interviews with subject matter experts substantiate the potential motivation of the learner to complete the short set of warm-up exercises if the learner perceives the necessity; yet most likely some tend to skip this part of the exercise routine. They also agree the short length of time required to complete the set enhances the chances the learner will be motivated to complete the set.

Attention

As with any voluntary exercise program, proper execution of the movements is imperative. In developing the attention-getting strategies, it is important to consider "what users are trying to do and how they are trying to do it" (Carroll 1992, p. 335). While Carroll's advice was originally for developing technical documentation, it is good advice for anyone developing instruction on procedures. As Carroll notes, users generally tend to want to start as quickly as possible (1992).

To that end, we will have the users begin doing exercises shortly after the class begins and the learners will get the opportunity to work with an instructor to ensure each exercise is performed correctly. As the instructor circulates while the learners practice,

learners will be able to check their movement against a PowerPoint presentation.

The walk through will gain the attention of the learner by encouraging correct form and positioning and allowing the learner to get started immediately (without necessarily rushing the learning process). While performing the exercises in the routine, the instructor will individually coach each learner to become aware of form and safety and related biofeedback signals, which will help the learner stay focused on the exercise.

Relevance

The learner will have chosen to participate in a formal exercise program or sport with the approval or encouragement of a physician. The learner may already have a positive attitude about attending the sessions. The instructor will have opportunities to point out why warm-up exercises are an important part of every exercise plan and will refer to the benefits throughout the course. Additional handouts or Web-based material will include comments about the importance of a safe and effective warm-up.

Demonstrating relevance will also help the learner focus attention throughout the class.

Confidence

Keller (1983) notes "…the perceived likelihood of success, and the extent to which success is under learner control" (p. 395). Successful experiences build positive reinforcement which increase the expectancy for further success (Keller, 1987).The learner will watch each warm-up exercise correctly demonstrated by the instructor. The learner will then be given the opportunity to practice each warm-up exercise with the

instructor present giving encouragement or helping the learner make corrections until the exercise is performed successfully. The learner will be encouraged to focus on performing the warm-up exercises properly even though they may have had prior experience.

Since the course is part of a beginner's series, the marketing for the course will indicate that beginners are welcome and the skills taught will be basic. Of the five exercises to be taught, only two have more than two or three operations, as indicated, which make them easy to master. The three simpler exercises, the neck stretch, arm circles, and shoulder rolls, will also be familiar to a significant number of class members, which should help build confidence for the two more difficult moves.

Satisfaction

The learner will have the opportunity to experience both extrinsic and intrinsic satisfaction (Keller, 1983). Extrinsically the learner will enjoy satisfaction by receiving supportive help from the instructor as the exercises are performed using correct form. Intrinsically the learner will enjoy the satisfaction of knowing the exercises were performed correctly and without injury as well as receiving the biofeedback signals that the muscles and cardiopulmonary systems are prepared for further exercise. The learner is prepared to move forward with exercises knowing that they performed the warm-up exercises in a safe manner. The warm-up routine can also reduce anxiety about the possibility of injury during further exercise. The learner will enjoy satisfaction as their body shows improvement through exercise. The learner will also attain satisfaction from the slower pace of preparing the body and mind for exercise.

Sequencing

Decisions about instructional sequence are based on the nature of procedure learning as well as to the real-world practice of these procedures.

It is important in a procedural learning task to identify the decision steps (assuming it is not a linear task). Then, these decision steps are broken into sub-steps may either be linear or have branches (Reigeluth 1999). The procedures for these exercises are fairly linear, with most the decision points indicating that the student should either reduce the range of motion or stop.

For example, in the neck stretch the decision points and sub-steps are:

Neck Stretch:

1.1.1. Stand in a neutral position, with shoulders squared and feet firmly on floor.

    1.1.1.1.   Stand

    1.1.1.2.   Square shoulders

    1.1.1.3.   Make sure feet are firmly on floor.

1.1.2. Tilt head toward shoulder and hold.

    1.1.2.1.   Tilt to either the right or the left **(Decision Point)**

    1.1.2.2.   Monitor neck for feeling of stretch

    1.1.2.3.   Stop tilting when it is uncomfortable **(Decision Point)**

1.1.3. If no pull is felt in muscles, stretch it, otherwise stop. **(Decision Point)**

    1.1.3.1.   If a pull is felt, stop.

        1.1.3.1.1. If a pull is not felt, use hand very gently tilt head slightly further in the direction of the stretch

            1.1.3.1.1.1.   Put hands on head.

    1.1.3.1.1.2. Very gently press until a stretch is felt.

 1.1.4. Hold for # seconds.

  1.1.4.1. Decide # of seconds.

  1.1.4.2. Count # of seconds.

  1.1.4.3. Stop.

 1.1.5. Repeat or Stop.

Next, a procedural learning task usually should be presented using a generalization, and an example. As steps increase in difficult, the number of examples should also increase. If numerous examples (or non examples) are used, the examples should be as different as possible from each other, and should be given in order of difficulty (easy first) (Reigelugth Procedure Using Summary 1999, ¶4).

In the neck stretch, the first nonexample may be "Do not bounce the head from one side the other." In this particular example, other errors may not be common enough to warrant a reminder from the instructor. If the instructor gives an example of an error that is very rare, the students may spend too much time thinking of that, instead of what they are doing.

If possible, equivalence classes should be used to group procedures together so that a student needs only to learn one problems if two problems use the same steps (Reiguleth 1999). In the flexibility exercises, many of the sub-steps are repeated. If the common errors and basic concepts behind a sub-step are used, they do not need to be relearned. This is especially true of the principles/rules that ensure safe practice for our exercises, thus they are emphasized in the first exercise and then reinforced in the subsequent, more complex exercises.

Examples of Equivalence classes

All exercises	(Note: Simple-to-complex versions. See flowchart.) - Assume starting body position - Pull back if uncomfortable **(Feel pain?)** - Count - Switch sides (left/right or back/front) - Repeat or Stop as needed
Some exercises repeat	- Monitor for stretch **(Feel stretch?)** *Note*: Not used in arm circles, but in all others
No exercises repeat	**-** Specific steps of exercises, e.g., Grab your toes with your fingers or Extend legs up

Thus, our instructional sequence follows both a spatial sequence (head-to-toe) to give students an easy-to-remember sequence for practicing outside class, and also a simple-to-complex and familiar-to-unfamiliar sequence: the earlier stretches are simpler to perform and are more likely to be familiar to more students, where the later stretches have multiple steps and are likely to be less familiar to beginning students.

Sequencing (Head-to-toe; simple-to-complex)

Exercise	*Complexity*	*Approximate Area of Body*
Neck stretch	Easy	Top; Neck
Arm circles	Easy	Middle top; Arms
Shoulder rolls	Medium	Middle top to middle; Shoulders and shoulder blades
Lower body twists	Moderate Difficulty	Middle; Torso
Sumo-squat and stretch	Difficult	Bottom; Hips and Toes

All three sequencing strategies are listed as useful strategies by Morrison, Ross, and Kemp (2004).

<u>Instructional Strategies</u>

Instructional strategies are those strategies that are determined to be optimum methods for guiding students in meeting the learning objectives. Our team will use the following instructional approach, based on Merrill's first principles of instruction (2002), to address each of the identified objectives.

Pre-instructional Strategy

As identified in our motivational strategies above and in the analysis document, most of the students come to class very interested in the topic. Therefore, instruction begins with a three step process:

1. Announce the overall objective of instruction: "By the end of class today, you should be able to do a five-exercise flexibility warm-up safely on your own." Morrison, Ross, and Kemp (2004) and Foshay, Silber, and Stelnicki (2003) recommend a clear statement of the learning objective as part of introducing a unit of instruction. This is especially important in this context where learners are consumers who will want to know the purpose of the class they are attending.

2. Identify the goal and steps of the procedure: "By completing a flexibility warm-up, you can raise your core body temperature and improve your flexibility and mobility during your workout. To do so, we will use five exercises that will help warm up your whole body." According to Reigeluth (1999), procedure learning should begin by naming the procedure and identifying the goals and steps.

3. Link the procedure to existing information. Foshay, Silber, and Stelnicki

(2003) and Merrill (2002) identify the importance of connecting the new material to material learners already know. Since the course targets new gym members with novice skills, it may be most useful to connect the purpose of warming up to non-exercise situations. Instructors should select common mechanical metaphors involving the need for lubrication in introducing the value of a flexibility warm-up: "I'm sure, living in this neighborhood, that many of you have had some experience with buildings that have older doors and windows. As you know, when they aren't properly lubricated, they tend to squeak when you apply pressure. Your body is the same way: before you make it work under pressure with serious exercise, you need to make sure it's ready. The flexibility warm-up is like adding oil to a door hinge – it makes it easier to move and prevents wear and tear."

Objective 1: Learners can perform each of the indicated flexibility exercises

Each of the exercises is, in and of itself, a well-defined, linear procedure. Thus, the first step in teaching each exercise is to describe and then demonstrate the procedure (Reigeluth, 1999; Foshay, Silber, & Stelnicki, 2003; Merrill, 2002). As part of the description and demonstration, the instructor will also display, using presentation software, a set of images for each exercise that lists the individual motions that make up the exercise (as described in the analysis document) and illustrates the key steps or movements in that exercise, as described under student and instructor materials below

In addition to the projected images, the instructor will also demonstrate the exercises. After demonstrating twice while talking through the movements, the instructor

will invite the class to join and practice the exercises.

Evaluation

As noted above, the instructor will be able to observe student performance by circulating among students as they practice and giving them constructive suggestions on improving form.

Objectives 2 & 3: Avoid Overextending the Stretch & Avoid Fatigue

The instructor will introduce two inputs that will help students practice their stretches safely. Before beginning to practice any stretches, the instructor will introduce two rules:

1. You're warming up to avoid injury, not to cause it!
2. The warm-up isn't the workout! You shouldn't get fatigued while warming up.

The instructor will introduce students to two feedback mechanisms to help them monitor these inputs:

1. If you feel pain while stretching or extending a muscle, pull back and reduce your range of motion. If it continues stop.
2. You should be able to continue talking while warming up. If you feel short of breath to the point that you cannot talk easily, slow down your movement.

The instructor will repeat these guidelines between exercises, and repeat shortened forms of them while circulating: "If you feel pain, pull back," and "If you can't talk, slow down."

Evaluation

By the end of the class, the instructor will check to make sure the class as a group can repeat back the short forms of the two rules, as noted above. Additionally, the instructor can also check with students who seem to be over-exerting themselves, feeling pain, or reducing their range to ensure they are monitoring their own comfort and exertion properly for the warm-up process.

Objective 4: Feel comfortable warming up on their own

This outcome will be addressed through motivational design and assessed through in-the-gym performance as noted above.

Message Design of Student & Instructor Materials

Minimalism

In creating the instruction manual, student reference materials, and other instructional materials it is important to consider "what users are trying to do and how they are trying to do it" (Carroll, 1992, p. 335). Users generally tend to 1) want to dive in, 2) have trouble recognizing exactly which error they made, and 3) tend to rely on previous experiences, and 4) are at not good at following programmed procedures (Carroll, 1992). While some of these apply mainly to machine-based tasks, these princples can generally be applied to have individuals behave and think.

PowerPoint Presentation

As noted in the instructional strategies, student materials will include a PowerPoint presentation that indicates and illustrates the basic steps of the exercises.

As noted, this will give students a point of reference to use while the instructor is working with other students and will aid visibility for students in more crowded classes who may have trouble seeing the instructor.

The presentation will include the following slides:

1. Neck stretch: Image of neck extended to the left, neck centered, neck extended to the right (three images).

2. Shoulder roll: Image of the shoulders at the top of the roll and at the bottom of the roll (two images).

3. Arm circles: Side image of person doing arm circles to illustrate direction of motion, and two front images of person doing arm circles to illustrate range of motion – one image at the top of the motion and one image at the bottom (three total images).

4. Lower-Body Twists: Overhead image of a person in the neutral lower-body twist position, followed by images of legs twisted to the left side and then to the right side.

5. Sumo Squat and Stretch: Image of a person in the squat position with hands on toes (bottom/neutral position) and an image of the person in the stretch/top position (two images).

Additional Learner Materials

Student Hand-Out and Flexibility Exercise Scoring Sheet

The availability of this type of presentation not only provides visual cues during instruction, but can be printed and given to the learner for reference. In place of the instructor demonstration and audio cues given in the presentation, the student

PowerPoint will either contain basic directions in the Notes area of the document (based on the instructor script in the outline) or an embedded .mp3 audio file with these basic directions. Additionally, since information on common errors will not be provided verbally, the initial slide will remind students to review the entire presentation before attempting the exercises at home. At the end of the PowerPoint, in order to not interrupt the flow and tempo of the presentation, a written reminder of the most common errors for the three complex stretches will be given.

To aid the evaluation of the course overall, and to given students a method for evaluating themselves, a sheet with be provided. The top section will list each stretch and given point values for each aspect of the stretch (e.g., neck stretch, 1 point for standing in a neutral position, 1 point for tilting neck an equal number of times to each side). The bottom section will be detachable; it will include a general feedback area (written comments), and an opportunity for students to rate various aspects of course as "poor", "okay", "good", or "very good."

Poster: Avoiding Overextending and Fatigue and Course Information

A simple poster will also be available to remind users of how to avoid overextending their muscles and fatigue. It will be a PDF that is designed to hang on the gym wall for a quick reference. This poster will also help establish the use of the mnemonic. On the bottom, the poster will also contain information on the next available sessions, and the list of flexibility exercises students learn in the session.

Overview and Availability (Web)

As noted in the analysis document, the gym wants to place the text and images

from the PowerPoint onto the Web to create a simple, self-paced instructional

presentation that all members and potential members can use. Thus the learner

materials will also include the handout based on the instructor PowerPoint, which can

be downloaded. It will be hosted on a Web page (or pages) on the gym's Web site.

Trainer Training & Instructor Guide

Because this course is part of a new-member-retention strategy, before leading a

class session, instructors are required to follow the instructor's guide and attend a train-

the-trainer session. The instructor's guide will include:

- Overview of warm-up exercise session

- Objectives

- Content outline

    o Script for pre-instructional strategy

    o The duration and steps of each stretch so that they are taught in a
      consistent format.

    o Likely errors and consequences

    o Instructional sequence and a script for key portions where the
      instructional strategies indicate that particular language should be
      used

- Print-outs of the PowerPoint presentation

- Instructions and troubleshooting guide on using the projector for the
  presentation and audio equipment

- Relevant instructor policies set by gym management

Usability Testing

The materials for the instructor will be reviewed by our SMEs, who include experienced trainers and master's-prepared exercise physiologists. They will be evaluating the materials for comprehension, precision and efficacy. Further, potential instructors will be asked to provide feedback after using the material with a test group of learners. Evaluation will be determined by observation of the learner and by direct interviews.

Congruence

Student and instructor materials will follow the same sequence. The student materials will contain illustrations that will substitute for the instructor demonstration which takes place during the actual lesson. The PowerPoint presentation that will be used by the instructor can be printed for the student to take with them after the class and the same presentation can be posted on the Internet

Communication

Communication between the instructor and the learner will take place in more than one form.

- Verbal
- Demonstration – Visual / Non-verbal
- PowerPoint – Visual
- Written
- Online

The language used will be geared toward the layperson involved with exercise.

Ongoing communication between the learner and instructor will be crucial to the success of the instruction and thus avoid injury.

Formative and Summative Evaluation

The materials provided to the learners and instructors will be formatively reviewed and evaluated by the SMEs, potential instructors, and a pilot group of learners. The evaluation will include ease of use, clarity, and perceived value.

Cheetah will summatively evaluate the effectiveness of this course and their other new members courses in reference to their original goal for instituting the courses: new-member retention. If the courses are effective in increasing and maintaining skill, confidence, and interest of new members, then their should be fewer contract cancellations at the end of the first month and improved attendance over the first 2-3 months of membership.

Other evaluation strategies will include:

- Attendance of the courses by new members once they are placed on the schedule
- Mentor trainers will attend a class and give feedback to both trainer and manager
- Student score sheet ranking their performance using forms provided after each session, including an detachable area for feedback on the session
- Observation of members using the procedure on the gym floor
- Informal feedback to gym management

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