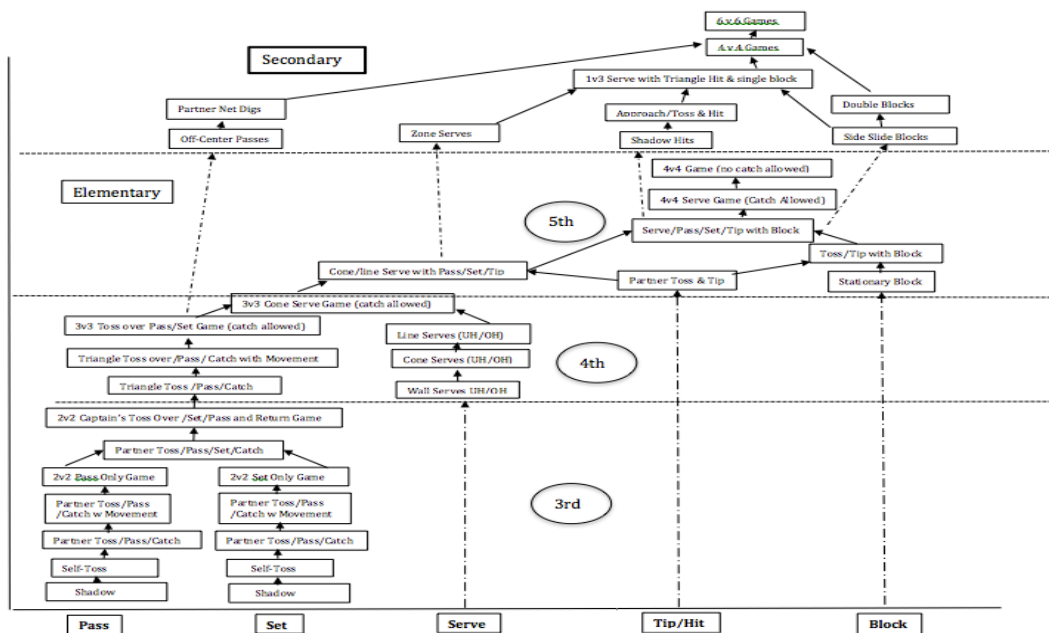THE OHIO STATE UNIVERSITY

Content Development
Coding Assessment Training Manual
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This manual can be downloaded at:

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INTRODUCTION

The Concept of Content Development

Fundamental to notions of quality teaching is a teacher's understanding of the content that they teach (Ward, 2013). This understanding effects the decisions that teachers make as they design, implement and modify instruction (Rovegno, 1995; Ward & Ayvazo, in press). Content development -- the ability to select, sequence and implement instructional tasks to meet a specific instructional outcome -- is a critical skill for physical education teachers (Rink, 2009). It has been well established that when content knowledge is weak, student learning outcomes are weak, and conversely when content knowledge is strong, student learning outcomes are stronger (Iserbyt, Ward & Li, 2015 Iserbyt, Ward & Martens, 2015; Sinelokov, Kim, Ward, Curtner-Smith, & Li, 2015; Ward, Kim, Ko & Li, 2015). In short, teachers' content development can distinguish between of effective and ineffective teachers (e.g., Ayvazo & Ward, 2011; Kim, 2015; Iserbyt, Ward & Li, 2015 Iserbyt, Ward & Martens, 2015; Sinelokov, et., al; 2015; Ward et. al. 2015).

Development of the categories in content development

Rink's (1979) seminal work on content development conceptualized four different ways of developing content by: 1) informing, 2) extending, 3) refining, and 4) applying. The informing task is defined as the initial task in a sequence of the tasks designed to teach a specific outcome such as a layup. Extending tasks are the tasks that are used to increase or decrease the complexity of difficulty of tasks relative to a prior task such as change the rules, or the space. Refining tasks are tasks that require a specific focus on the quality of the performance such as improving the technique. Last, an applying task occurs when the aim is to either apply what students have learned in a game setting or to assess their learning. In the decades following Rink's (1979) conceptualization, new instructional models are used in physical education, and those models emphasize the use of games as teaching tools, such as the *Teaching Games for Understanding* and *Play Practice*. These are models are different from the traditional approaches.

In response to these models and their use of games as instructional tasks Ward, Dervent, Lee, Ko, Kim, Lee and Tao (in review) modified Rink's (1979) categories to include refining tasks that occurred within games (e.g., playing a game using on one kind of pass) and extending task that occurred as a game (e.g., 3v1 keep away game). In addition, Rink originally defined an applying task as one that could as a game or as an assessment task. Because these reflect two different practices they created two categories to replace the old one. One called the game-applying task, where the intent was to play a game with the goal of applying what has been learned that lesson without the goal of refining or extending. A second they called non-game applying task that referred only to assessment.

Intra-task and inter-task development

When teachers design lessons we can consider that the lessons consist of sequences of instructional tasks for the group to perform such as tasks that teach the layup (e.g., informing followed by a series of extending and refining tasks) or how to move to get open (e.g., informing followed by a series of extending-applying and refining- applying tasks). The tasks in this sequence are called *intra-tasks* and we designate them as being directed to the whole class. However, it is often the case that adaptations must occur to original plan to individuals and small group members of the

class. Such as when a teacher decides the task for a particular group of students or any individual student is too hard and makes it easier by slowing down the defense, or change the distance to throw a ball. These modifications of are called *intra-task modifications*. When we look at the collection of intra-tasks in a lesson plan or in a unit of instruction we call these inter-task development. Inter-task development is an indication of the scope of the instruction that is occurring. Such a teacher deciding to teach a forward roll and cartwheel in a gymnastics lesson. The figure below illustrates the relationship among intra tasks, intra-task modifications, and inter task.
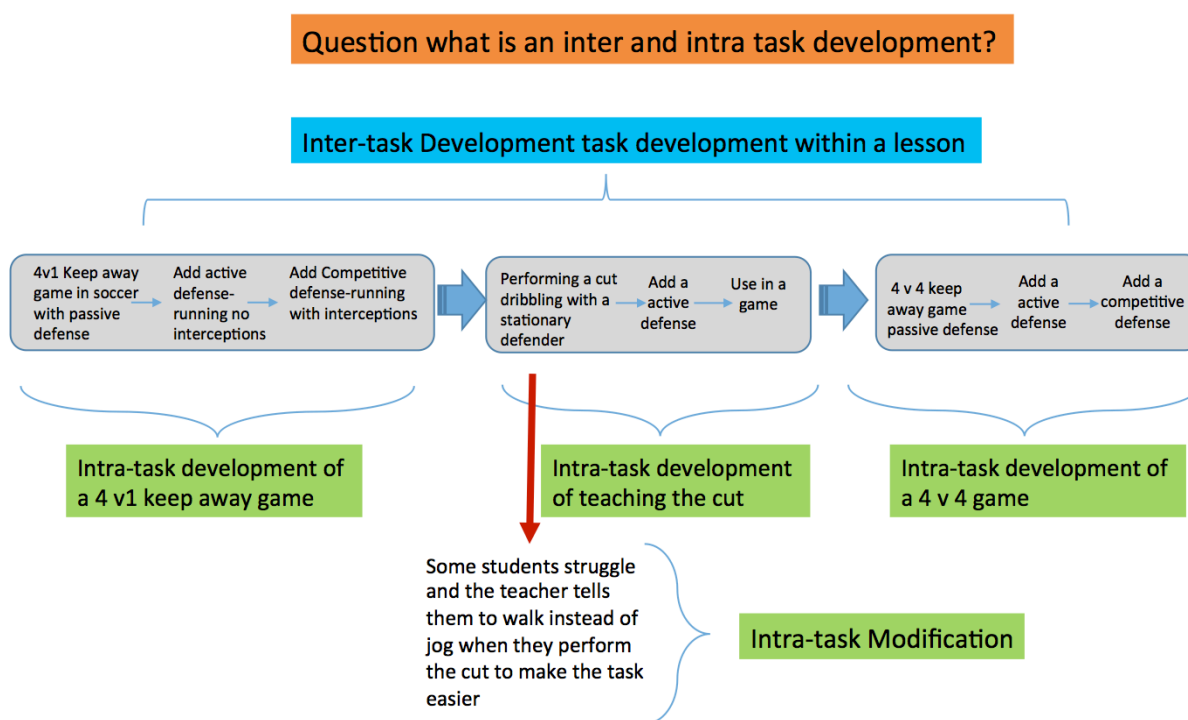
Figure 1.   Inter- task and Intra-task development

Different ways of observing content development

There are at least four ways in which content development can be observed and coded in terms of the type of instructional task.

Content map (CM). A content map is an assessment tool created by Ward, Lehwald and Lee (2015). It is a graphic organizer of instructional task progressions that defines the content to be taught in an instruction unit in terms of instructional tasks and the progressions of those tasks (i.e., content development).

Lesson and unit plans. The instructional tasks described in lesson plans or in the collection of lesson plans in a unit of instruction can be used to analyze the type of instructional tasks intended to be used by teachers.

Live or video observation of actual teaching. Direct observation of what instructional tasks are used by teachers and how they are sequenced in a class can coded in terms of the type of task.

Interviews or conversations about teaching. Interviews or conversations can capture how teachers might sequence content in a class.

PURPOSE AND ORGANIZATION OF THE MANUAL

The purpose of this manual is to train teachers and researchers in the definitions of content development so that it can be objectively, accurately, and reliably reported from lesson plans, content maps, observations of lessons, and from discussion or interviews with teachers. A second purpose is to provide researchers with an evidence based tools to analyze content development. The manual is organized with these two purposes in mind as two sections: Training and research.

Training

The training section is organized around five phases. Learners must pass each phase successfully to move to the next step.

PHASE 1: **Definition of the content development variables**.

Learners will learn the definition of the categories for content development.

PHASE 2: **Assessment 1. Learning Task Definitions.**

Learners will answer 7 questions on definitions.

PHASE 3: **Examples of content development in different sports and skills.**

Learners will learn different examples of content development in various sports or skills. A total of 46 tasks are provided with their rationales.

PHASE 4: **Assessment 2. Content development in specific contexts.**

Learners will answer questions on content development in different contexts. A total of 105 tasks are presented.

PHASE 5: **Assessment 3. Content development in different assessment tools.**

In the final phase, the learners will analyze the Content Maps (CM) and lesson plans (LP). 83 tasks in CMs and 31 tasks in LPs are provided.

Research tools

The research tools section introduces the data collection instrument, discusses how to gather reliable data, and how to interpret the data.

TRAINING

PHASE 1. Definition of content development variables

In this section, the definitions for each category will be explained.

➢ **Outcome** – After you complete this section, you will understand the definitions of each content development categories.

Informing task (I):	The initial task in the progression of a skill and which cannot be classified under the other categories. For example, "Let's start with partner toss and pass"
Extending task (E):	A task that increases the level of difficulty of a previous task by adding elements (e.g., part to whole), changing or adding a new dimension (e.g., distance, space, speed, target area) or adding more variety (e.g., asking students to move in a different way). For example, "Now I want you to add the candlestick position right after your forward roll."
Extending-Applying task (EA):	An extending task occurring in context of a game-like environment where the purpose is to apply the task in a game. For example, "In this 3v3 game let's turn the defense from passive to active."
Refining task (R):	A task that requires a specific focus on the quality of performance such as technique or tactical performance. For example, "Remember to focus on following through with your foot once you pass the ball."
Refining Applying tasks (RA):	A refining task occurring in context of a game-like environment where the purpose is to apply the task in a game. For example, "In this 3v3 game make sure to run an open space before receiving the pass."
Applying task-game (AG):	A task that uses the content of the lesson in a game. For which the particular focus is not specified. For example, "Let's play 3v3 game"
Applying non-game task (AN):	A task that centers on assessment of form or on how to use the movement, rather than just how to do the movement (Rink, 2006). For example, "I want you to count the passes you can make in 1 minute. Ready, Go!"

PHASE 2. Assessment 1. Questions on definitions

Read the sentence and fill in the blanks with the task development categories: Informing (I), extending (E), refining (R), extending- applying (EA), refining- applying (RA), applying non-game (AN), and applying task-game (AG).

➢ **Outcome** – You can check if you understand the definitions of each category. You have to answer the questions 100% correctly. If you miss any, you have to go back to phase 1 to review the definition for each category and then start over.

1) _____ is defined as a task that requires a specific focus on the quality of performance such as technique or tactical performance.

2) _____ is identified as a task that centers on assessment of form or on how to use the movement, rather than just how to do the movement.

3) _____ is a task that adds or subtracts complexity from the prior task.

4) _____ is defined as the initial task in the progression of a skill and which are cannot be classified under the other categories.

5) _____ is a task that concerns changing the complexity or difficulty of student performance in a context of a game-like environment where the purpose is to apply the task in a game.

6) _____ is a task that uses the content of the lesson in a game for which the particular focus is not specified.

7) _____ is identified as a focus on the quality of student performance in a game-like environment where the purpose is to apply the task in the game.

Check your answers in the answer key on page 2 under the heading Assessment 1.

PHASE 3. Examples of content development in different sports and skills

Below are, examples of four different sports or movements are provided: a) soccer, b) badminton, c) gymnastics, and d) catching. The first column indicates the number of the task, the second column describes the type of the task, the third column provides a description of the task, and the last column indicates the rationale why each task is defined as that task type. Your task in this phase is to read to understand the different tasks. You should be able to recognize the tasks.

➢ **Outcome** - After you complete this phase, you will understand how contents are developed in actual tasks in different contexts and how those tasks are defined. Further, the rationales for each definition are explained.

a. **Soccer – Inside kick passing for 8th graders**

#	Task type	Description of tasks	Rationale
1	I	Inside kick passing with pairs 10 feet apart. Students are allowed to control the ball before pass it back (only 2 touches).	Initial task
2	R	Focus on kicking in the middle back of the ball.	These are the refining tasks since they focus on the quality of the passing skill.
3	R	Make sure to keep your body pointing at your target.	
4	E	The distance is now 15 feet but you can still control the ball.	These are extending tasks since the difficulty of the tasks are modified from the previous task.
5	E	Inside kick pass without control (only 1 touch).	
6	EA	Students continue inside kick passing but within a 3v1 pass only game in a designated area (8x15 m.). Students can touch the ball 3 times. The defender is passive. She/he cannot intercept the ball. Students rotate every 30 seconds.	These are extending applying tasks as students apply inside kick pass in a game-like setting while the difficulty of the tasks is increased.
7	EA	Now, you can only touch the ball 2 times.	
8	EA	Defenders, now you can get the ball from them.	
9	RA	In the same game teacher says "Pass the ball only to the open player"	This is a refining applying task as it focuses on the quality of a tactical aspect of the game in a game-like context.
10	EA M	Tracey, you are doing a great job with your passes. A challenge for you. Now, you can only make one touch to the ball. .	This is an extending applying intra-task modification as the task is modified (i.e., increase the difficulty) for a particular student, to whom the previous task is easy.
11	RA M	Kate, make sure you put your plant foot next to the ball. Your toes should be in line with the front of the ball.	This is a refining applying intra-task modification, which focuses the quality of the skill in a game. Please note thatthe task is developed for a specific student.
12	AG	Now, it is time to combine groups. We will play 4v4 game.	This is an applying task game because the teacher does not emphasize a particular focus.

b. Badminton - Overhead stroke skill for 6th graders

#	Task type	Description of tasks	Rationale
1	I	Paired students take position either side of the net. Keep rally with your partner by using overhead stroke.	Initial task
2	R	Make sure following through with the swing.	These are the refining tasks since they focus on the quality of the stroke skill.
3	R	Focus on contacting shuttlecock and your racket in front of your body.	
4	R	Continue to play but take side position with your body while hitting each shuttlecock.	
5	E	Overhand stroke through target.	These are extending tasks since the difficulty of the tasks are modified from the previous task.
6	E	Play with two shuttlecocks per a pair.	
7	EA	Serve and overhead stroke half court mini game (1v1), first to 11 points.	These are extending applying tasks as students apply overhand stroke in a game-like setting while the difficulty of the tasks is increased.
8	EA	Now, let's play the same game cross courts.	
9	EA	Overhead stroke full court game (2v1).	
10	RA	In the overhand stroke skill game, teacher says "Try to send shuttlecock through corners."	This is a refining applying task as it focuses on the quality of a tactical aspect of the game in a game-like context.
12	EA M	This team can hit shuttlecock again when they miss it.	This is an extending applying intra-task modification, because teacher modifies the task (i.e., decrease the difficulty) for a particular group that is struggling with the skill.
13	RA M	Jack, you should rotate your waist after the stroke in order to increase your stroke power.	This task is a refining applying (RA) intra–task modification, which is developed for a particular student while focusing the quality of the skill in a game.
14	AG	1v1 half court mini game. You can use any stroke you want.	This is an applying task game because the teacher does not emphasize a particular focus.

c. Gymnastics – Forward roll for 3rd graders

#	Task type	Description of tasks	Rationale
1	I	Students complete all the warm-up drills. Students start from Rock & Roll.	Initial task
2	R	Make sure that you tuck in your chin.	This is a refining task since a teacher provides students a point of skills to focus on.
3	E	Now, pair-up. Let's try Rock & Roll with partner stand.	These are extending tasks since the task got more difficult than prior task.
4	E	Let's move to forward-roll. This is an individual task. You do not need to be able to stand-up at this point.	
5	R	Make sure you bend your knees to start.	This is a refining task since a teacher provides student a point of skills to focus on.
6	R M	John, make sure you draw in your chin.	This is a refining intra-task modification since the teacher pointed out a focus of the skill for a specific student.
7	E	Go back to your partner. This time, your partner will help you to stand-up after you roll.	These are extending tasks since the task got more difficult than prior task.
8	E	Go back to individuals. Now you practice by yourself to work on a complete version of forward roll. Start from standing position, roll, and stand up.	
9	E	Now, I want you to do the forward roll by finishing on one foot instead of two.	
10	AN	Now, we are going to create a routine. Include balance poses which we learned last class and forward-roll, create your own routine. OK. Let's show your routine in your group.	This is an applying non-game task since it is not a game but focus is on assessment of how to use the movement.

d. Fundamental motor skill – Catching for 1st graders

#	Task type	Description of tasks	Rationale
1	I	Students finish warm-up and start from self-toss and catch a scarf.	Initial task.
2	E	Now, we work on the same task but we use beach ball.	This is an extending task since it increased difficulty of the task by changing the weight and size of the ball.
3	R	Everyone, try to use only your hands when you catch it.	This is a refining task since the teacher pointed out a specific focus of the skill.
4	E	This time, let's try to toss higher and catch the beach ball.	This is an extending task since it increased difficulty of the task by changing the height of the toss.
5	R M	Kate, try not to close your eyes when you catch it. You need to track the ball until you catch it with your hands.	This is a refining intra-task modification since the teacher pointed out a specific focus of the skill for a particular student.
6	E	Now pair-up. This time, you are going to toss a ball to your partner and your partner will catch the ball. If you are tossing the ball, aim your partner's chest.	This is an extending task since it increased difficulty by using a partner toss.
7	E	Since everyone is doing well, let's throw a little bit away from your partner's chest.	This is an extending task since it improved the difficulty of the task by adding moving before they catch.
8	R	You have to look at the ball very carefully. Do not lose tracking of the ball.	This is a refining task since the teacher pointed out a specific focus of the task.
9	AN	Count how many times toss and catch successfully by only using hands with a partner.	This is an applying non-game task since it has a competitive aspect but focus is on catching balls successfully with hands.

PHASE 4. Assessment 2. Content development in specific contexts

In this assessment we are going to present you 105 tasks in a number of different movements and sports. The first task indicated in each table is an informing task (I) followed by tasks which may be extending (E), refining (R), extending- applying (EA), refining- applying (RA), applying non-game (AN), or applying task-game (AG) that is there are no more informing tasks in each table other than the first one. In this section, please read each task and identify which type of task most closely describes the following task statements that occur in a sequence and record your answer in the task type column. Please note that the tasks that are addressed to a particular student or a group must be coded as intra-task modification, which should be indicated with the letter "M" after the task type (i.e., E M=extending intra-task modification).

➢ **Outcome** – You can check if you understand each task type correctly in different contexts. You must answer 100% correctly in this section. If you miss any, you have to go back to phase 3 to check your understanding. If necessary, go back to phase 1 to read the definitions again.

a. **Soccer**

#	Task type	Task
1	I	The class is divided into groups of eight. Each student has a ball and dribbles continuously without losing control in a 10x15 yard field designated by four cones.
2		Dribble only with your non-dominant foot.
3		Focus on looking away from the ball when you dribble.
4		Now, it is time to dribble with only dominant foot.
5		You can dribble with both feet.
6		Lucas, make sure you tap the ball rather than kicking it.
7		Teacher puts 10 cones inside the designated field. Imagine the cones are defenders. While you dribble, keep your ball away from the cones.
8		Change the direction of dribble once you get each cone.
9		Make sure your body is between the cone and the ball when you change direction.
10		Cones are cleared off the field. Teacher pairs up students. One student (i.e., attacker) dribbles, the other student serves as a defender (1v1). Students switch roles every 1 min.
11		Change the direction of dribble away from the defender.
12		While you dribble, focus on keeping the ball away from the defender.
13		The ball should be away from the defender but close to your feet. Imagine the ball is tied to your shoe with a string that is never longer than one foot.
14		Now, the defenders can intercept.
15		Now, I want you to count how many times you change the direction of your dribble to keep away from the defender.

b. **Basketball**

#	Task type	Task
1	I	Students are divided in 2 groups. Students with the basketballs start from the right side and go for layup. After they shoot, they run through and get to the end of the other line. At the same time, students on the left side rebound the ball, then dribble it to the right side and pass it to the next person who needs a basketball.
2		Make sure your right arm and right leg move together.
3		Now, we can move back. Let's run faster for the layup.
4		When you bring your arm up make sure your knee comes up with it.
5		Let's switch to the left. Now, those on the left line do the layup, right line you are the rebounders.
6		Now, it's time to practice layup with the defense. I want you to pair up. One partner goes behind the cone on the end line. Other goes behind the cone where we first started layup with the ball. Once player with the ball starts dribbling, her partner steps up to defend but do not intercept the ball. Remember, you need to finish your dribble with layup.
7		Claire, imagine there is a string connecting your left arm and left leg.
8		Defense is active, now.
9		Defense, make sure you hold your arms up.
10		Alright, let's have 2v2 game. The only way to score is doing layups.

c. Lacrosse

#	Task type	Task
1	I	Pairs start stationary passing within 10 yards distance.
2		Remember to step with non-dominant foot towards target.
3		Jordan, don't forget to pull your non-dominant hand down while extending your dominant hand.
4		Kelsey, could you just throw the ball to Kate instead of passing with your lacrosse stick?
5		Focus on creating a target with your stick to your partner.
6		Have anyone seen a catapult? Your stick should move like a catapult when you pass!
7		Let's pass from a long distance; 15 yards distance would be great. Please step back.
8		Can this group use a fleece ball? Let me know when you have continuous accurate passes. Then, you may start to use a regular lacrosse ball.
9		Continue passing but this time I want you to move.
10		If the lacrosse ball comes low try to position your stick more horizontal.
11		Teacher groups 3 students per group. Students keep passing the lacrosse ball in a 20x20 yard field.
12		It is time to play 3v1. Defender cannot intercept. Students rotate every 30 seconds.
13		Freeze! Remember to watch lacrosse ball into the pocket before pass it. Go!
14		Defenders are active, now.
15		I have seen awesome passing skills today. I think we can add a goal now. We still play 3v1 game but with a goal. Remember! You can shoot after 3 passes.

d. Volleyball

#	Task type	Task
1	I	Students pair up. Each pair has a ball. Students gently toss the ball to their partner, partner passes the ball back to tosser who then catches the ball and repeats. After 5 passes roles are changed.
2		Make sure you touch the ball with your finger pads.
3		I want you to have 2 passes then catch it.
4		I want to see spider fingers. Remember to separate your fingers.
5		Let's try to have pass, set, set sequence. Then, you can catch the ball and start over with a toss.
6		Make sure you contact the ball with your forearms, between wrist and elbow.
7		Tossers can toss the ball either side of their partners.
8		Remember to make a slide step before you pass the ball.
9		Emma! Why don't you use a trainer ball? It is softer. You may feel more comfortable.
10		Don't forget to bend your knees before the ball gets to you.
11		Let's play 2v2 game. Game starts with a toss over the net. You cannot have more than 3 touches to send the ball back over the net. I still want to see the pass, set, set sequence.
12		Players in field 2, you are allowed to catch the ball and then pass it.
13		I think we can add serve right now. Let's start the game with the serve.
14		Rob! focus on locking your elbows to keep your arms straight.
15		It's our last minute for this game. Let's try to have your longest rally with your opponent. Remember to count! Ready and go!

e. Tennis

#	Task type	Task
1	I	Today, we are going to work on ground stroke both forehand and backhand. Start from forehand. Try to shake your hand with your racket like this. This is how you hold a grip. Can you try to hold a grip for forehand?
2		Hitting point is next important thing. Hitting point is always in front your body. Can everybody show me?
3		Pair up. One of your roles is to drop a ball to your partner. And one of your roles is to practice. Switch your roles after you hit 10 times and keep rotating.
4		When you hit the ball, try to brush up the ball with your racket, like this (the teacher demonstrates).
5		Now let's work on your backhand. You hold your grip as you cut a vegetable. Can you show me?
6		Let's do the same drill as we did for forehand. One of you is feeder and one of you practice. Go.
7		Jack, make sure you brush up a ball.
8		Now let's try rally with your partner.
9		Let's play a game. Make a group of 4. This time you use one ball for 4 people. It is like doubles but we start from forehand stroke.

f. Badminton

#	Task type	Task
1	I	One of the partners serves and other partner plays drop shot.
2		Make sure taking side position at the time of contact.
3		Focus on follow through with swing.
4		Continue to play but this time try drop shot as close as the net.
5		Make sure to contact the birdie in front of your body.
6		Drop shot through target point.
7		Now, let's combine net drop and lift/lob techniques.
8		Serve and drop shot half court mini game (1v1). Winning score is 11.
9		Please, try to send your drop shots towards front side of the courts.
10		Drop shot full court game (2v1).
11		Tom, keep shuttlecock in front of you, not your backside.
12		1v1 full court single match.

g. Softball

#	Task type	Task
1	I	Teacher demonstrates to grip the softball. Now, I want you to show me how to grip softball.
2		Make sure spreading your fingers out of the ball.
3		Teacher pairs up students to throw softball to partner. The distance between partners is 10m.
4		Now, I want you to put your gloves on and keep throwing the ball to your partner.
5		Remember, your opposite shoulder should face the target when you throw.
6		Let's increase the distance between partners.
7		I want to see letter "L" in your arm just before you throw softball.
8		Now, at my signal, I want you to run then throw the softball to your partner.
9		Remember to rotate your upper body!
10		Joe!That was a great catch with the glove. But, you need to secure the softball with other hand.

h. Throwing

#	Task type	Task
1	I	Today, we are going to work on throwing. Grab 10 bean bag and find a poly spot to stand on. Throw a bean bag one at a time to the wall as hard as you can.
2		I want you to focus on your step in.
3		Next, you are going to work on your arm motion. Pair up with you friend. Your friend is going to stand behind you by holding a bean bag. What you do is to face sideways, reach to the bean bag behind you, grab it, and throw it to the wall.
4		Jeremy, make sure that you face side way before your start your reaching motion.
5		Let's make a target for you. This time, go back to individual and aim the target when you throw.
6		Focus on your arm motion. Your arm should go through your back, not front.
7		Now, go back to your group of three. Each group can have 30 bean bags and a basket to aim. Let's count how many bean bags you can throw into the basket.

i. Jump rope

#	Task type	Task
1	I	Next task, we are going to work on double jump. But let's start from forward jump 30 times.
2		Now, try backward jump 30 times.
3		Pick forward or backward jump. Either one is ok. I will assess 1 minute. Your goal is try not to make miss jump for a minute. If you make an error jump, you can start over.
4		Let's move to double jump. Try 10 times.
5		If you are not sure how to do, try this task first. Put your jump rope down. You are going to jump and while you jump try to clap your hands twice.
6		Now try to keep doing the same thing 10 times.
7		Make sure you clap your hands twice before you land.
8		Let's grab your rope again. Now try double jump.
9		Use your wrist to control jump rope. You do not need to use your whole arms.
10		Let's try 10 times continuously.
12		If you achieve more than 30 times, try backward double jump.

Check your answers in the answer key on page 2 under the heading Assessment 2.

PHASE 5. Assessment 3. Content development in different assessment tools.

In this phase, you are going to practice coding in two different types of content development assessment: Content Maps (CM) and lesson plans (LP). There are 83 tasks in CMs, and 31 tasks in LPs to code. Please, choose the type of task for each task on the CMs from informing (I), extending (E), refining (R), extending-applying (EA), refining- applying (RA), applying non-game (AN), and applying task-game (AG). Please keep in mind that CMs and LPs do not include intra-task modification tasks as they are designed for entire class. However, there may be a small possibility to detect intra-task modifications in LPs, if all plans in the unit are coded, respectively. Please, write an answer in the blank of each task.

Check your answers for CMs on page 3-5 and LPs on page 6 in the answer key.

➢ **Outcome -** You have to answer 95% of the tasks (e.g., 79 of 83 CM tasks, 29 of the 31 LP tasks, and 108 tasks in total) correctly. If you don't answer %95 of the tasks correctly, you must return to phase 4 to check your understanding. If necessary, go back to phase 1 to review the definitions.

a. **Content Maps**

a1. **Volleyball CM**

24)_____ 4v4 Game (no catch allowed)

23)_____4v4 Serve Game (Catch Allowed)

22)_____ Serve/Pass/Set/Tip with Block

26)_____Toss/Tip with Block

20)_____Cone/line Serve with Pass/Set/Tip

21)_____Partner Toss & Tip

25)_____ Stationary Block

19)_____ 3v3 Cone Serve Game (catch allowed)

15)_____ 3v3 Toss over Pass/Set Game (catch allowed)

18)_____Line Serves (UH/OH)

14)_____ Triangle Toss over/Pass/ Catch with Movement

17)_____Cone Serves

13)_____Triangle Toss /Pass/Catch

16)____ Wall Serves UH/OH

12)_____ 2v2 Captain's Toss Over/Set/Pass and Return Game

11)_____Partner Toss/Pass/Set/Catch

5)_____ 2v2 Pass Only Game

10)_____2v2 Set Only Game

4)_____ Partner Toss/Pass /Catch w Movement

9)_____ Partner Toss/Pass /Catch w Movement

3)_____ Partner Toss/Pass/Catch

8)_____ Partner Toss/Pass/Catch

2)_____ Self-Toss

7)_____ Self-Toss

1)____Shadow

6)_____ Shadow

PASS　　　SET　　　SERVE　　　TIP/ATTACK　　　BLOC

a2. Basketball CM

16)__ 3v3 Pickup game

22)___ Dribble move to basket or into Jump Shot

14)___ Triangle off the ball defense

15)___ 2v1 Pickup game

21)___Triple Threat Decisions

13)___Zig-zag Dribbling

20)___Triple Threat Decisions

18)___2v1 Possession passing

12)___Open Space Dribble

17)___Overhead partner passing

19)___Triple threat & Jab step

8)___1v1 game

4)___1v1 Lay-up focus

11)___Freeze Tag Game II

3)___Progressive lay-ups

7)___On-ball-defense

10)___Step back dribble

2)__ 1v1 focus dribble & Shoot

6)___1v1 focus rebounding

9)___Crossover dribble

1)__ Partner shooting

(5) Rebounding

SHOOTING   DEFENSE   DRIBBLING   PASSING   OFFENSE

a3. Lacrosse CM

Concept map boxes and labels:

- 37)____6 v 6 games
- 36)____4 v 4 games
- 7)____While Moving
- 33)____Grid Game
- 3)____Give & Go
- 32)____1v1 Dodge
- 6)____Shot off Pass w/ Defender
- 35)____Multi-Goal Game
- 31)____Split Dodge
- 2)____V Cut
- 5)____Shot off Pass
- 34)____End Zone Game
- 30)____Change of Hands
- 4)____Arc Shooting
- 22)____Triangle w/ Defender
- 29)____Pull Dodge
- 21)____Triangle Passing
- 28)____Cradle Tag
- 8)____Keep Away
- 14)____2v1 Blocking
- 20)____Passing Challenge
- 27)____Run in Open Space
- 1)____ Stationary Passing
- 12)____From Behind
- 13)____1v1 Shadow
- 19)____Move Down Field
- 26)____Walk Line
- 11)____Pick up & Move
- 12)____1v1 Positioning
- 18)____Stationary Passing
- 25)____Follow Leader
- 17)____Overhead
- 10)____Partner Rolls
- 16)____Shoulder
- 24)____Stationary
- 9)____Stationary
- 15)____Underhand
- 23)____Stick Parts

Axis categories: Offense, Shooting, Scooping, Defense, Catching, Passing, Cradle, Dodges

b. Lesson Plans

The next three tables are lesson plans for a) flag-football, b) acro-sport, and c) volleyball. Tasks in the lesson plans are described on the left column. Please, put your answers right next to the numbers on the right column. Choose the type of task for each task on the lesson plans from informing (I), extending (E), refining (R), extending-applying (EA), refining- applying (RA), applying non-game (AN), and applying task-game (AG).

b1. Flag Football

Activity Development	
4 v 4 Application Running Game "We're going to start with yesterday's 4v4 running game. Utilize the huddle to decide which play to run. Browns/Broncos quickly line up in both the offensive and defensive positions w/the browns of offensive (count down). Start with passive defense. Game on, GO!"	1)
"Freeze! I want to see shielding from the C and R. GO!"	2)
Pass Routes teaching progression "Each of you will partner up with a teammate to practice route running; one will be the QB and the other the R. The QB will line up at the red cone and the receiver at the purple cone. The first route is called the hook, on go/hike the receiver will run to the blue cone, stop and quickly turn toward the QB with target hands up; the QB will then pass it. Four attempts then rotate positions. GO!"	3)
"Freeze! The next routes is called a "down and out". In your same positions the R, on go/hike, will run to the cone and make a perpendicular cut toward the outside of the field, with target hands up GO!"	4)
Pass Routes with Defensive Position & Movement "Freeze! Gather on the sideline closest to me and demonstrate the stance facing to me. GO!"	5)
"With your partner there will be a receiver and a defender. The receiver will line up on the line of scrimmage and the defender will be 3 yards/steps back. The receiver will count down from 3, on go the receiver will run a hook. I want to see the defender back peddling with their eyes on the receiver's belt buckle. Once the R makes a move I want the defender to break with the receiver to deny a pass (demonstrate). Rotate with partner after 4 attempts, GO!"	6)
"Freeze! Receivers will now run a down and out. GO!	7)
"Freeze! Browns quickly line up facing the end zone with a QB, C, and R GO! The fourth person will be a defender. On go/hike the C will snap the ball the QB. The receiver will run a hook route to start with an active defender. I want to see the defender back peddling and breaking with the receiver. (Demonstrate). Rotate after two attempts. (D to QB, R to D, C to R, QB to C) (demonstrate)	8)
4v4 Application passing game. "Browns quickly line up in the formation we've used the last two days. Broncos quickly move into defensive formation. In this game the running back is going to move to a receiver on the other side of the left side. The outside defender will now move to play defense on the other receiver. The defense will be active, jogging; they cannot make a play on the ball or intercept it. No contact. They will play person-to-person defense with no double teaming. I want you to play either hook or down and out. GO!"	9)

b2. Acro-Sport

Activity Development	

Reviewing the techniques of the rolls
Previously, we learned about dynamic balance using 3 rolls. Can anyone tell me what these rolls are? Forward roll, pike forward roll, and backward roll. GREAT!
GREAT! Before we continue, I want you to review our roll techniques. In your team folder you have a checklist with each roll we learned last lesson. I want you to take 5 minutes and try to perform each one of these techniques by one by. Upon completing a technique, mark it off your list and move to the next one.
    1. Forward roll
    2. Pike forward roll
    3. Backward roll
	
	1)
	2)
	3)

Leap Techniques
Today's AcroSport lesson focuses on a variety of leaps. The biomechanical principle I want to focus on is linear momentum. Linear momentum is essentially the quantity of motion an object possesses in a straight line. Linear Momentum is relevant to a leap because we will transfer the linear momentum from our dynamic balances to generate force for our leap. We will learn 7 leaps step by step in a row. OK! Now, I will demonstrate how to do each leap, respectively. Then, ask you to do one by one. The leaps that I want you perform are;
    1. Cat
    2. Split
    3. Stag
    4. Hitch
    5. Chainee
    6. Chasee
    7. Waltz.
	
	4)
	5)
	6)
	7)
	8)
	9)
	10)

Creating a routine For today's performance I want you to get with your team and put together a routine with at least one balance, two rolls, two leaps, and at least one combination of a balance, roll and leap. A videographer from another team will record the balance routine on the class iPad. Once your team's routine has been recorded you may continue to practice on your own or watch another team's performance.	11)

b3. Volleyball

Activity Development	
Triangle Toss, Pass, Set & Catch I want you to set up in triangle formation with a tosser/catcher, passer, and setter. Tosser and setter have their backs to the net, while passer is out in front facing the net. Tosser throws to passer, passer passes to setter, setter sets the ball to the original tosser who then catches the ball. Repeat for 3 times and then rotate your positions. Now, I want you to toss the ball so that the passer has to move one step to any direction.	1) 2)
Toss Over Net, Pass, Set and Jump Catch Let's move the next task. Please place in two groups of four on one court. Each group has a tosser on one side of the court and a passer, setter and catcher on the other side. Tosser tosses the ball across the net to the passer, passer passes the ball to the setter, setter sets the ball towards the catcher who jumps and catches the ball. After 3 tosses, rotate your positions to the clockwise.	3)
3v3 Captain's Toss Game Now, it's time to perform the skills we have learned in this lesson. We will play 3v3 game. Game starts with captain's toss across the net to the passer. I want to see the triangle formation and our passing sequence; pass, set, set. GO!	4)
Wall Serves: Underhand and Overhand Now, I am going to introduce you the serves. This is how we start each point in a regular volleyball game. I want you to get a ball and stand approximately 10 feet away from the wall. We start with underhand serve. Please, serve the ball to the wall, retrieve it and repeat for 10 times. GO! Since you complete 10 underhand serves, let's continue with overhand.	5) 6)
Cone Serves Get in pairs with one of you will be serving and the other retrieving. On both sides of the net, 3 cones are placed on the sideline of the court. I want you to start with the closest cone (3 meter line) to the net. GO! Now, if you have 5 successful serves, please move back to next cone, which is half way between 3 meter and service line. Once you have 5 successful serves from the second cone serve from service line. Let's pinpoint our serves. Do you see the poly spots on the court? I want you to work on serving to a particular area on court. Aim one of the poly spots on the other side of the court and try to serve the ball on it. You can use either underhand or overhand serve. GO!	7) 8) 9) 10)
Line Serve, Pass, Set and Catch I have seen really good serves today. I want you get in groups of 4 with a server on one side of the court and a passer, setter, catcher on the other side. Server serves the ball across to the passer, passer passes ball to setter, setter sets ball to catcher, catcher roles ball under net back to server. Rotate after 3 serves.	11)

TRAINING TOOLS

Data collection instrument

The data collection instrument can be found in Appendix A, on the last page of this manual. It follows typical organization of when the data were collected by whom, whether the data collected will serve as a primary data set or be used for IOA and information about the setting. Though one can write the code for each task in the second column we encourage the use of the third column for notes about the task. The frequency of coding tasks is quite low and as such there is time to make notes in the third column. Appendix A has room for 15 tasks which in our experience for most lessons is sufficient. However, this is insufficient for most content maps and additional copies of Appendix A will need to be made.

There is an important coding convention relative to intra-task modifications. There are tasks is where the teacher has modified the original task to the class because to adapt instruction to individuals and small group members of the class. Such as when a teacher decides the task for a particular group of students or any individual student is too hard and makes it easier by slowing down the defense, or change the distance to throw a ball. Because these represent intra tasks that are focused on some but not all members of the class we recommend coding them using the same code (e.g., E or RA) but adding the letter M to indicate that this was an intra-task modification. In this way these data can be separated from data to the class. They can still be included in the formulae below. These data can also be analyzed as a measure of teacher adaptation to student needs-- pedagogical content knowledge.

A second convention is needed when coding task cards and station/circuits where many tasks are being presented for use at the simultaneously for the class members to choose or be assigned to. Under such conditions we suggest (a) looking for evidence that the teacher expects stations to be performed in a particular order as an example of extending or refining for all students-that is all students must go from task A. If so then task A will be the informing task and the next can be coded relative to task A. However, if the order is simply managerial in nature such as start anywhere and move in a clockwise position we suggest that you code tasks as informing tasks or use your judgment to determine informing tasks and code the rest of the task based on whatever informing tasks you see. The former will likely underestimate content development.

Establishing Inter Observer Agreement

Inter Observer Agreement (IOA) among coders is necessary to ensure the reliability of the data. There is no promise that coders in your research team look and comprehend data exactly in the same way after only completing this manual. In establishing IOA, coders can judge reliability of their analysis. To establish IOA, you should randomly select at least 33% of all data. Two individuals trained using this manual will code the same events independent of one another. Once completed, the two data sheets are scored for the number of agreements and disagreements in the coding. The formula to calculate IOA is: $\frac{\text{Agreements}}{\text{Agreements+disagreements}}$ X 100. To establish IOA, the results of formula must exceed 85% (Cooper, Heron & Heward, 2007).

Data Interpretation

Content development categories by themselves do not provide a criterion referenced measure that can be used to examine depth of content knowledge. For example, two extending tasks are not a better indicator than two refining tasks. The critical analyses, that in our view, is the pattern of the relationship of content categories to the informing task. That is the informing task as the initial task in an instructional sequence, as a benchmark against which task development can be compared. The Table below presents six formulae that use tasks as denominators, and the other task types (e.g., extending and applying) as numerators. The formula creates a ratio that is converted to an index that is a continuous variable allowing scores to be compared against each other. For example, in formula 6 a ratio of 4.0 is presents a pattern of at least four tasks developed beyond an informing task. Similarly a ratio of 2.0 is presents a pattern of two tasks developed beyond an informing task. While not all informing tasks require content development, most do. In terms of looking at content development relative to the informing task, the index provides evidence relative to the depth of content knowledge of participants. In this study we differentiate between weak depth of content and stronger depth of content development using an index score of 3.0. Previous studies have established that a 3.0 cut point for distinguishing between weak content develop and stronger content development (Ward et al., in review). This is consistent with the expertise literature where it has been noted that, "the most fundamental difference between experts and novices is that experts bring more domain specific knowledge to bear in solving problems within their domain" Sternberg & Hovath, 1995, p. 10).

Table 1. Formulae of content development

Hypothesis	Formula
1. Content development can be measured in terms of the relationship between tasks that are designed to extend and refine it relative to those tasks that do not.	$\dfrac{E+EA+R+RA}{I+AG+AN}$
2. Content development can be measured in terms of the relationship between tasks that are designed to extend and refine it apply it relative to those tasks that do not.	$\dfrac{E+EA+R+RA+\ AG}{I+AN}$
3. Content development can be measured in terms of the relationship between tasks that are designed to extend it relative to informing and games	$\dfrac{E+EA}{I+AG+AN}$
4. Content development can be measured in terms of the relationship between tasks that are designed to extend it and relative to the informing tasks	$\dfrac{E+EA}{I}$
5. Content development can be measured in terms of the relationship between tasks that are designed to refine it and relative to the informing tasks	$\dfrac{R+RA}{I}$
6. Content development can be measured in terms of the relationship between tasks that are designed to extend and apply it and relative to the informing tasks	$\dfrac{E+EA+R+RA+AG+AN}{I}$

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