Assessment has become increasingly important at all levels in the education system (Broadfoot & Black, 2004; Guskey, 2011, 2013). Assessments can be defined as the variety of methods used to grade, evaluate and rank students’ knowledge or to measure everything from kindergarten readiness to potential college success. Assessments are often perceived, particularly by students, as tests that mostly express judgment of performance (Guskey, 2011; Kohn, 2011; Tomlinson, 2008). Earl (2003) separated assessments into three areas: “assessments of learning,” which are assessments that make a judgment on performance; “assessments for learning,” which are assessments informing the teaching process (teacher); and “assessments as learning,” which are assessments informing the learning process (student). Depending on where the emphasis is placed when developing assessments, the impact of such assessments on teaching and learning can be different (Tomlinson, 2008). This article discusses basic concepts of assessments used in education and explores the idea of using “assessments for and as learning” — defined as instructional assessments — in the field of health and physical education.
Defining Assessment Concepts

Conventional or traditional assessments

Conventional assessments are quite popular among educators, despite the controversy that such practices might not be the best way to determine students’ knowledge. These assessments are typically paper-and-pencil tests with multiple-choice, fill-in-the-blank, matching, and true-or-false questions. Traditional assessments are seen as easy to administer and easy to grade. Traditional tests could come along with a textbook or be developed by the teacher. Typically, they require students to select, recognize or recall content. Such assessments provide very little to no opportunities for students to utilize higher-order thinking or problem-solving skills (Dietel, Herman, & Knuth, 1991; Mauch, 2005). Generally, traditional assessments are used as “assessments of learning” and are seen mostly as a fair and objective way to judge students’ learning.

Authentic and performance-based assessments

These assessments can be defined as “assessments for learning” and can easily become “assessments as learning.” These assessments are more hands-on and are based on real-life situations. When well designed, students are compelled to evaluate, analyze and engage in problem solving and synthesize solution(s). Thus, students engage in high-order thinking, while utilizing prior knowledge and prior experiences to construct their own new knowledge (Andrade, Huff, & Brooke, 2012). In physical education, for example, asking students to develop their own fitness program to increase muscular strength and flexibility would require them to call on various concepts and previous knowledge to complete the task. Similarly, in health education, students may be asked to develop a diet plan to decrease body fat. Authentic assessments have the potential to provide direct evidence of students’ learning while guiding their learning in the process (Dietel et al., 1991; Fusco & Barton, 2001).

Formative assessments

Such assessments are mainly “assessments for and as learning” (Earl, 2003). These assessments are done frequently with two purposes in mind: to gather information about students’ learning/performance and to guide teachers’ future instruction (Andrade & Cizek, 2010; Brookhart, Moss, & Long, 2008; Fisette & Franck, 2012). One could compare formative assessments to a chef tasting a dish while cooking to decide whether more salt or spices are needed. Similarly, teachers use formative assessments to gather information as to how they can adjust their future instructions to guide their students to better learning/performance.

Summative assessments

On the other hand, summative assessments are “assessments for learning” (Earl, 2003). These assessments are mostly evaluative rather than diagnostic and are done for the purpose of judging students’ performance. These assessments are usually administered at the end of a unit, semester or school year and are recorded as final scores or grades. Summative assessments attempt to measure the overall end product of a particular knowledge area at a particular point in time. Summative assessments grant no opportunities for improvement in students’ performance or teachers’ instruction, unless the teacher allows revisions and resubmissions.

Instructional Assessments

In this article, assessments that have the potential to be assessments for and as learning (Earl, 2003) are defined as instructional assessments (IAs). Thus, IAs include formative assessments that are purposefully designed to provide a platform for students to process, maintain and easily retrieve learned content (Andrade & Cizek, 2010). Moreover, they include assessments that have the potential to inform teachers of how to modify their instruction to help their students improve their learning. The IAs are designed with the multiple intelligence theory in mind (Bloom, Engelhart, Furst, Hill, & Krathwohl, 1956) to meet various students’ learning styles and thereby
maximize students’ learning. Instructional assessments look more like instructional activities; thus, students might not even be aware that such practices are assessments (Van der Mars & Harvey, 2010). Utilizing traditional numeric grades should be avoided. Symbols such as check, check plus or check minus are one option, but a better option is to use written or verbal comments focusing mainly on areas in which students need to improve.

Assessment in Physical Education

When it comes to physical education and incorporating assessments, physical educators have been somewhat reluctant, particularly in regards to the cognitive domain assessments. For the most part, assessments designed to address the cognitive domain require students to use reading and writing skills and therefore take away from physical activity time. Drawing from personal experiences, however, there are at least three possible opportunities to implement IAs in physical education without greatly affecting physical activity time.

One possible opportunity is at the beginning of a physical education lesson, while students are waiting for their peers to come out of the changing rooms. Another great opportunity is provided when a large class gathers in a small gymnasium. In this situation, physical educators, for safety reasons, are forced to rotate students in and out of physical activity. Here, IAs can be a valuable strategy to keep students engaged in some sort of learning while waiting for their turn. Moreover, the end of a physical education lesson presents another good opportunity to engage students in IAs while cooling down before their next class. Lastly, physical educators could assign homework, just like any other subject.

The following IAs are aligned with various learning styles and Common Core State Standards (CCSS) literacy skills such as reading, writing, listening and speaking. These IAs can easily be implemented in health and physical education settings without jeopardizing physical activity time in physical education, if students are asked to do some preparation as homework (see Table 1).

Reflections and summaries

Reflection or summarizing activities address the needs of students with verbal-linguistic and interpersonal learning styles (Dyson & Brown, 2010). Such activities increase metacognitive skills and allow students to derive personal meaning from each individual learning experience. Reflections and summaries are excellent methods to promote discipline-specific vocabulary and overall support for the CCSS literacy skills standard, an expectation of all disciplines including health and physical education. In health education, these writing activities can be done individually — at home or in class — and discussed with a partner or in small groups. In physical education, these activities could be done at home and discussed while waiting for everyone to come out of the changing rooms. Three examples of this type of assessment activity are personal notes, story writing using dry-erase mini boards, and story writing using the TodaysMeet application.

- **Personal notes**: Students are assigned to read on a topic at home and are asked to create personal notes. In these

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**Table 1. Instructional Assessment Strategies and Learning Styles**

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<thead>
<tr>
<th>Instructional Assessment Strategies</th>
<th>Learning Styles</th>
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<td>- Personal notes</td>
<td>Logical-mathematical</td>
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<tr>
<td>- Story writing: dry-erase mini boards</td>
<td>Spatial</td>
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<tr>
<td>- Story writing: TodaysMeet</td>
<td>Kinesthetic &amp; interpersonal</td>
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<table>
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<td>- Ten-item list</td>
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<td>- Three-column table</td>
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<tr>
<th>Visual representations of information</th>
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<tbody>
<tr>
<td>- Draw and write note cards</td>
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<tr>
<td>- Segment collage poster</td>
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<th>Collaborative activities</th>
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<td>- Partner rephrase</td>
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<td>- Guiding the reader</td>
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<td>- Find someone who</td>
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</table>
notes, students should start off by drawing a picture or a symbol for each thought or concept and then writing up a short summary for each. The pictures and symbols help students organize and remember concepts and thoughts about the reading. A follow-up step to this note taking is to have students state their opinions and support them with evidence. At first, students should be expected to have separate sections on their personal notes labeled “Opinion” and “Evidence” so that they can conceptualize an opinion statement and state supporting evidence. Students can write personal notes in both health and physical education settings for homework with one specific topic or reading in mind (e.g., yoga or sexual harassment). Teachers can provide a list of topic-specific vocabulary and expect students to incorporate the vocabulary terms into their notes so that they practice discipline-specific academic language. Moreover, this IA promotes the use of literacy skills required by the CCSS.

**Story writing with dry-erase mini boards:** Students are taught how to piece a story together with the use of dry-erase mini boards. This IA works best with younger students, and it can be utilized at the end of a period as a calm-down activity in health and physical education settings. Each student is provided with a dry-erase mini board, while the teacher has a set of note cards with words such as “how,” “where,” “when,” “with whom,” “why,” and “what.” Start off with a short sentence (e.g., “Anna runs” or, “Anna has the chicken pox”), and then have a student select one of the note cards (e.g., “when?”) and have students write another sentence incorporating the “when” into their sentence. The activity could end after a couple of notecard questions are incorporated into the story writing and can continue again at the end of the next class or be assigned as homework. Dry-erase mini boards are excellent for promoting CCSS literacy skills such as reading and writing. They can also be very useful in other IA activities, such as review sessions in both health and physical education settings.

**Story writing using TodaysMeet:** Story writing could also be implemented at the middle and high school levels with the use of the TodaysMeet application (Miller, 2014). TodaysMeet allows teachers to create an electronic room students can join with their electronic devices and contribute their sentences to the story. Students can use nicknames to protect their identity, thereby making participation emotionally safe for all students. This electronic room can be shared on a classroom screen, and everyone can see how the story develops. Moreover, the electronic room can stay open beyond class time, and students can continue to contribute after class ends.

**Lists and charts**

Lists and charts are commonly used in a number of subjects to help logical-mathematical learners organize information. Similarly, such strategies can be adjusted for use in health and physical education. Lists and charts can help students make connections and discover relationships between various physical activities and health-related concepts covered in health and physical education. This IA can easily be implemented in health education, while for the physical education setting, adjustments are necessary. The lists and charts described here (i.e., 10-item list and three-column table) can be used at the beginning or end of a class period, while students are waiting for everyone to come out of the changing rooms, or at the end of the lesson during closure.

**Ten-item list:** Divide a white board or big sticky note into two columns. Label one column as “Main Ideas” and the other “Details.” Ask students to write under each column as much as they know about a specific topic (e.g., muscle strength or nutrition). Once the master list is completed, ask students to create their own list of 10 “main ideas” and 10 “details,” either individually, with a partner, or in small groups. If they choose to do the list with others, consensus must be reached for the items on their list. Students should be allowed to use ideas from the board and other sources, particularly in the beginning or until they have a better understanding of what kinds of responses are expected. Such IAs can be used in the beginning, middle and end of a unit to see what students know and what they personally value about the topic. The master list could be done in the beginning of the class, while the 10-item list could be completed during lesson closure both in health and physical education settings.

**Three-column table:** Construct a three-column table labeling each column with a physical education-related concept (e.g., offense, defense and transition). Ask students to fill the columns with key concepts of each topic and then compare and contrast the concepts as they apply in two different sports such as in European handball versus basketball. Words such as “both,” “in comparison,” “each,” “however” and “similarly” should be provided at the beginning of this IA to help students learn how to compare and contrast.
**Visual representations**

Spatial learners can greatly benefit from the use of words and pictures. This “dual coding” addresses these students’ preferred learning styles and offers students a platform to show their learning in different ways. The following two IAs (i.e., draw-and-write note cards, segment collage poster) are designed to help spatial learners make connections, increase memory retention, and retrieve information easier with the use of pictures and symbols.

- **Draw-and-write note cards:** This IA requires students to draw pictures or symbols on a note card, followed by a few sentences explaining what they consider to be the main idea of the topic. This IA works best when teaching a segment that has multiple subtopics, such as in the case of “invasion games” in physical education, with the subtopics of “basketball” or “soccer,” and in the case of “human body” in health education, with the subtopics of “skin” or “respiratory system.” At the end of each subtopic, students create their draw-and-write note cards with what they consider to be important and valuable. The note cards are then collected to see what individual students valued or best understood from the topic. The teacher can provide feedback and encouragement with the expectation that students will be able to correct any inaccuracies themselves. Moreover, this IA can provide valuable information on the class’s understanding of the subtopics collectively. If an important topic or concept is not represented in the students’ note cards, the teachers may decide to reteach or reemphasize it before moving on (Dodge, 2009).

- **Segment collage poster:** This IA is an extension of the draw-and-write note cards idea. It requires a poster-sized paper divided into smaller sections/boxes. Each smaller box section represents each subtopic of the segments taught. Students use their subtopic cards with their own picture drawings or symbols and writing descriptions to make this segment collage poster. Students, as a class during lesson closure, choose the most representative draw-and-write note cards to include on the poster. The poster can be hung in the classroom or gymnasium so connections and references can be made in future lessons. This IA activity can be done either in class or electronically by creating a virtual poster on PowerPoint in Google Docs and sharing access with all students or a group of students.

**Collaborative activities**

With the use of collaborative activities, students have the opportunity to move and/or communicate with others as they develop and demonstrate their understanding of concepts. Collaborative activities promote social literacy (Arthur, Davison, & Stow, 2014) and interpersonal skills (Bloom et al., 1956), which are critical for 21st-century society. Three examples of collaborative activities (i.e., partner rephrase, guiding the reader, “Find Someone Who”) are described here.

- **Partner rephrase:** After discussing a concept or demonstrating something substantial, give students one minute to face a partner and discuss three things they understood about the concept/demonstration and raise two questions/uncertainties they might have. Moreover, ask them to make at least one connection to a previous lesson, another subject or a real-life situation. In the health education setting, have students record these connections on a note card, poster or white board. This will give students time to digest the information, articulate their understanding, own the material, and make connections among topics discussed in class (Dodge, 2009). In the physical education setting, students can be asked to make mental notes, and then during lesson closure, a few students may be asked to share some of the connections they made. Because probably not all students will be able to share during the few minutes of lesson closure, a system should be designed so that each student will, at some point in the unit, get a chance to share some of their thoughts.

- **Guiding the reader:** For homework, students are provided with a short article or a chapter that is missing a headline, and they are asked to create their own headlines. Topics can be health-related (e.g., food nutrients) or physical fitness-related (e.g., flexibility). Students can be challenged to create subheadings for subsequent paragraphs. When in class, students can be put in groups and asked to share their headlines and eventually agree on common headlines for the whole class. Ask each group to summarize the article with guiding questions like the ones provided in Table 2. This IA can be quite effective as an alternative activity to a rotational physical activity for large physical education classes.

- **“Find Someone Who”:** Students are given a sheet of paper with nine or more boxes. In each box, a question or comment is written in regards to a specific topic (e.g., European handball). If the aim is to promote interpersonal skills among students, questions about students’ in-

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**Table 2. Guiding Questions for Summarizing**

<table>
<thead>
<tr>
<th>Question</th>
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<tbody>
<tr>
<td>What is the main idea?</td>
</tr>
<tr>
<td>What do we know so far?</td>
</tr>
<tr>
<td>What is the significance of the event, discovery, problem, conflict, etc.</td>
</tr>
<tr>
<td>Whom does it affect?</td>
</tr>
<tr>
<td>What seems likely for the future?</td>
</tr>
</tbody>
</table>

*Adapted from Dodge (2009).*
Strategies

Interests could be included to trigger conversation. Some boxes could even be left empty so that each student can fill them in with their own question choice. Students are given time to move around, interact with their peers, and find out who has similar likes or who can provide an answer to a question. Each answer/comment must come from a different peer. Once all boxes are completed or after a preset amount of time, students are asked to summarize what they have learned from one another. This helps students organize the information in their minds and increases retention of the information. This IA could be used as a form of preassessment at the beginning of a unit or as a review activity before a formal summative assessment (see Figure 1).

### Concluding Thoughts

The main purpose of instructional assessments is to assist students throughout the learning process. This is accomplished through engaging students in learning situations in which they can organize information and concepts to be learned, trigger metacognition processes, and create connections among various subjects and previously learned material. Moreover, IAs promote interpersonal and literacy skills by encouraging students to interact with their peers and practice articulating their knowledge to others.

In addition, IAs can provide teachers with valuable information about the depth of students’ learning at a particular point in time. Such information can be critical, as the sooner teachers become aware of students’ struggles and misunderstandings, the sooner they can adjust instruction or reteach concepts in a different manner to meet students’ learning styles (Guskey, 2007/2008; Northwest Evaluation Association, 2014; Rink, 2010; Wermeli, 2011).

The IAs presented here can help students gain better insight into challenging material and concepts while providing...

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**Figure 1. Find someone who**

<table>
<thead>
<tr>
<th>Topic: European handball</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knows how many players are in European handball</td>
</tr>
<tr>
<td>Had breakfast this morning</td>
</tr>
<tr>
<td>Knows what the three-second rule means</td>
</tr>
<tr>
<td>Write your own question here</td>
</tr>
</tbody>
</table>

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**Reflections and summaries are excellent methods to promote discipline-specific vocabulary and overall support for the CCSS literacy skills standard, an expectation of all disciplines including health and physical education.**
a clearer understanding of the difficulties students encounter during the learning process. Health and physical educators are encouraged to implement a variety of IAs to identify best practices for teaching and learning. A health and physical education learning environment that includes a variety of student-centered IAs will enrich students’ experiences and empower both the teaching and learning processes.

References


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