

Types of Instruction Utilized in Physical Education

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Article Type: Original Research

ABSTRACT

Purpose: The purpose of this study was to identify the types of instruction teachers are incorporating that support the Universal Design for Learning (UDL) and determine if there were differences in instruction based on years of teaching experience and the level taught. **Methods:** A survey was completed by 136 physical education teachers. Survey questions were on a 4-point Likert-type scale ranging from *Always* to *Never* on how often they used each of the instructional strategies that fall under the categories of engagement, representation, and action/expression. Data were analyzed through descriptive statistics, Chi-Square test, and ANOVA to determine differences between the instructions depending on teachers' level taught (i.e., elementary, middle) and years of experience. **Results:** The most frequently integrated instruction were verbal directions, a demonstration, motivation, feedback, and to have students physically practice. The least integrated instructions were use of written instruction, video modeling, reading cues, writing cues, verbal rehearsal, and mental imagery. Significant differences were found among instruction based on years of experience but no differences were found among levels taught. **Conclusion:** Teachers are incorporating few aspects of UDL. Only 60% of teachers always provided a demonstration suggest teachers are relying on verbal instruction. Physical education teachers may benefit from more support, knowledge, and training in UDL to support engagement, representation, and action/expression.

Keywords: *instruction, Instructional Design, task presentation, Universal Design for Learning*

1. INTRODUCTION

As students eagerly enter physical education, teachers have the opportunity to deliver instruction to teach motor skills to last a lifetime. Instruction should be developmentally appropriate in order for children to learn. *Therefore, instruction should be to provide a custom educational experience for students based on their unique needs and experiences* (SHAPE America, 2015). This is also known as differentiated instruction. Differentiated instruction is when a teacher “reaches out to a student or a small group to vary his or her teaching in order to create the best learning experience possible” (Tomlinson, 2000, p. 1). For example, in physical education, a teacher would work with a student individually by showing the student visual pictures and videos to help support their motor skill acquisition.

Differentiated instruction can be achieved by providing multiple opportunities or avenues for students to learn. Providing multiple avenues for learning is in alliance with the Universal Design for Learning (UDL) framework (UDL; CAST, 2018; Morin, 2015). According to The Center for Applied Special Technology (CAST) website, UDL is, “a framework to improve and optimize teaching and learning for all people based on scientific insights into how humans learn” (CAST, 2018). Therefore, UDL is an instructional approach to individually meet the needs of a variety of students to maximize their learning.

UDL guidelines address that multiple means of engagement, representation, and action/expression should be incorporated to support all types of learners, those with and without disabilities (Lieberman, 2017; 2020). Multiple means of engagement are for the teacher to get the students ready to learn with motivation, choice, and meeting their interest. Some examples are creating a welcoming environment where the teacher motivates the students, provides feedback, clear instructions, and direction for the students to socialize. Examples of motivation can be music, choices in equipment, and a variety of levels of challenge. These strategies support the “why of learning” to help students feel comfortable and on track to learn.

Multiple means of representation are to present the content in multiple formats so all students have access to the material. For example, visual diagrams, written cue cards, visual pictures, visual breakdown of the skill, videos, and providing a demonstration by the teacher or the students. Such strategies support the “what of learning” where instruction is delivered in multiple forms.

Multiple means of action and expression is for the teacher to give the students a variety of options to demonstrate what they have learned. For example, students could demonstrate their learning in a variety of ways through means of verbalization, performance, mental rehearsal, or written. Likewise, this would allow the student to progress at their own rate and provide them with choices. The variety of forms of action and expression represent the “how of learning” where the teacher can document what the students have learned based on their ability level.

Children with and without disabilities can be taught motor skills using UDL. For example, Taunton et al. (2017) examined motor skills in children ($N = 67$) with and without disabilities before and after a six-week intervention. Participants’ motor skills were assessed using the *Test of Gross Motor Development-2* (TGMD-2; Ulrich, 2000). Participants in UDL group engaged in motor skill instruction that included multiple means of representation, action, and expression (i.e., verbal, visual, and kinesthetic directions, choice). Participants in the control group engaged in free play with access to playground equipment, open space, and equipment. Results revealed participants with and without disabilities significantly improved their motor skills after receiving UDL instruction in comparison to free play. Findings suggest instruction that provides choice and multiple forms of representation, action, and expression, in alliance with UDL, can help children learn motor skills in physical education.

Literature is limited to examining the effectiveness of UDL on teaching new motor skills in physical education. However, there are several research articles that have promoted the use of UDL and provided steps on how to integrate UDL in physical education (Brian et al., 2017; Gilbert, 2019; Kennedy & Yun, 2019; Lieberman, 2017; Lieberman & Grenier, 2019). While UDL has been supported in the writing, there is little known about how often teachers are implementing aspects of UDL.

Van Munster et al. (2019) examined instructional approaches used by physical education teachers ($n = 5$) and an adapted physical education specialist ($n = 1$) to support children with disabilities. Data were collected through two months of direct observations and interviews. Data resulted in three categories of instruction; 1) normalized instruction, 2) accommodations to meet the needs of students with disabilities, and 3) UDL. Findings revealed participants mostly used differentiated instruction which was to provide modifications in their program for students with disabilities. Participants also incorporated aspects of UDL in their program such as means of representation with verbal instructions along with a demonstration, visual pictures, and written instructions. Participants used means of action

and expression with a variety of equipment and allowing students to progress at their own rate and means of engagement with different forms of motivation and feedback to encourage the students to participate.

Findings from the Van Munster et al. (2019) study suggest aspects of UDL are utilized in physical education instruction to support students with disabilities by a small sample of teachers. However, UDL is designed for all students, including those in general physical education. There is little known about the use of UDL in the general classroom across a large sample of physical education teachers. Teachers with more years of experience and at lower levels may have more knowledge about instruction (Strand & Bender, 2011), but there is little knowledge about their implementation. Research is limited examining the instructional practices that teachers across different years of experience and levels are using in the categories of UDL. The purpose of this study was to identify the types of instruction that fall under the categories of engagement, representation, and action and expression physical education teachers are incorporating to teach new motor skills. Additionally, the study examined if there were differences in the types of instruction provided based on years of experience and the level taught.

2. METHODS

2.1 Participants

IRB approval from the principal investigator's university and all participants provided consent prior to data collection. Participants included 136 physical education teachers ($n = 106$ female, $n = 30$ males), with an average age of 41.5 ($SD = 11$), and an average of 15.8 years of teaching experience ($SD = 10.56$). Participants taught physical education in 32 of the United States. Participants taught physical education in elementary ($n = 51$), middle ($n = 16$), elementary and middle ($n = 10$), high school ($n = 22$), middle and high ($n = 3$), and elementary, middle, and high ($n = 17$). See Table 1 for participant years of experience.

Table 1

Participant Years of Experience

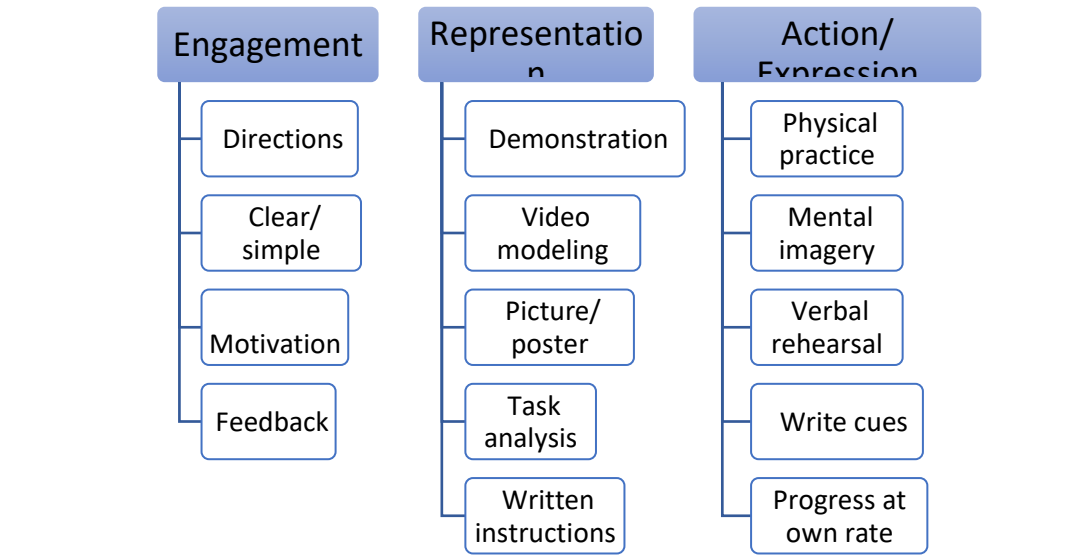
	n	%
1-5 years	29	22 %
6- 10 years	19	14 %
11- 15 years	22	17 %
15+ years	63	47 %

2.2 Survey Development

A survey was developed to assess use of instructional strategies that fall under the categories of engagement, representation, and action/expression. A pilot survey was reviewed for content validity by teachers and pre-service teachers ($n = 4$). Pilot results from the open-ended questions, related to the clarity and quality of the Likert-type questions, revealed the directions, questions, and answer choices were clear, understandable, and representative. Upon minor revisions in the wording recommended by the reviewers, the survey was created through Qualtrics, an online survey platform, and sent to physical education teachers across the United States through email, social media, and listserv. Inclusion criteria included being a current physical education teacher. Upon providing consent, participants were directed to answer questions related to the instruction they provide. The survey directions stated, *“think back to a typical lesson and the instruction you provide when teaching a new motor skill to a general physical education class. Please rate how often that you do the task listed below by selecting the appropriate response after the statement.”* For example, one question stated *“Direct students to a picture or poster”* and participants responded on a Likert-type scale from *“Always”* to *“Never”*. The survey included 14 instructional questions that include categories of engagement, representation, and action/expression. See Figure 1 for breakdown of instructional technique per category.

Figure 1

Instruction Per Category



2.3 Statistical Analysis

A scaled score was computed by associating point values to responses (i.e., 1 = *Never*, 2 = *Sometimes*, 3 = *Most of the time*, 4 = *Always*). Descriptive statistics and frequencies were computed per instructional technique to determine those that are more often and less often integrated. ANOVA was completed to test for differences among teaching years of experience and average instructional technique. Chi-Square Test of Independence analyses were used to examine the relationship between years of teaching experience (1-5 years, 6-10 years, 11-15 years, 15+ years) and level taught (elementary, middle, high, elementary/ middle, middle/ high, elementary/ middle/ high) and participants' selection of instructional technique (Always, Most of the time, Sometimes, Never). Cronbach's Alpha was completed to determine internal reliability of the survey. A probability level of $p < .05$ was set for all analyses using the Statistical Package for Social Sciences (SPSS) v.25 (IBM Inc., Armonk, NY).

3. RESULTS

Survey questions resulted in quantifiable types of instruction utilized in physical education that include the categories of engagement, representation, and action/expression. The forms of engagement that were highly integrated were verbal directions (M = 3.84), feedback (M = 3.82), and motivation (M = 3.78). The least integrated forms of engagement were clear and simple instructions (M = 3.45). The form of representation that was most frequently integrated was providing a demonstration (M = 3.55). The least integrated forms of engagement were breaking skills down into a task analysis (M = 3.04), providing pictures of the skill (M = 2.39), video modeling (M = 2.12), and providing written instructions (M = 2.06). The form of action and expression that was most integrated was to have students physically practice (M = 3.69). The least integrated forms of action/expression were having students' progress at their own rate (M = 3.13), verbally rehearse (M = 2.54), engage in mental imagery (M = 1.96), and write the skill cues (M = 1.42). See Table 2 for mean, standards deviation, and frequencies of the types of instruction from most to least integrated.

Table 2

Instruction to Support Engagement, Representation, and Action/ Expression

Instructional Strategy	n	Mean	SD	% Never	% Some times	% Most of the time	% Always
Engagement							
Verbal Directions	113	3.84	.492	1	3	8	89
Feedback	114	3.82	.484	1	2	11	86
Motivation	114	3.78	.528	1	3	14	83
Clear and simple	114	3.45	.566	0	4	48	48
Representation							
Demonstration	114	3.55	.611	0	6	33	61
Task analysis	114	3.04	.786	1	26	41	32
Picture of the skill	114	2.39	.723	6	57	29	8
Video modeling	114	2.12	.706	14	65	16	5
Written instructions	114	2.06	.801	21	60	11	8
Action/ Expression							
Physical Practice	114	3.69	.534	0	4	24	73
Students' progress at own rate	114	3.13	.735	0	21	45	34
Verbal Rehearsal	114	2.54	.822	8	43	36	13
Mental Imagery	114	1.96	.709	24	61	12	4
Write the skill cues	114	1.42	.637	64	32	3	2

Internal consistency was achieved within the survey, $\alpha = .733$. Significant differences were found in average instructional technique and years of teaching experience, $F(105,3) = 3.144, p = .028$ from the ANOVA test for differences. Results revealed a relationship between years of teaching experience and participants' use of instructional technique. Post hoc comparisons using LSD test indicated that the mean score for teachers with 6-10 years of experience ($M = 2.70, SD = 0.39$) were significantly lower than those with 1-5 years of experience ($M = 2.94, SD = 0.36$), and 11-15 years of experience ($M = 2.96, SD = 0.40$). Additionally, the mean scores of those with 15 or more years of experience ($M = 2.79, SD = 0.24$) were significantly lower than those with 11-15 years of experience ($M = 2.96, SD = 0.40$).

Chi square tests resulted in significant differences between years of experience and use of verbal directions, task analysis, picture of the skill,

and writing the skill cues ($p < .05$; see Table 3). There were no significant values ($p > .05$) between participants who taught at different levels (Elementary, Middle, High) and the level of instruction they provided to support engagement, representation, and action/ expression.

Table 3

Chi-Square Test Years of Experience

	Value	df	Sig
Engagement			
Verbal Directions	19.542	9	.021*
Feedback	7.115	9	.625
Motivation	13.177	9	.155
Clear and simple	6.470	6	.373
Representation			
Demonstration	3.149	6	.790
Task analysis	20.213	9	.017*
Picture of the skill	19.593	9	.021*
Video modeling	10.877	9	.284
Written instructions	15.535	9	.077
Action/ Expression			
Physical Practice	9.092	6	.168
Verbal Rehearsal	9.109	9	.427
Mental Imagery	13.294	9	.150
Write the skill cues	17.420	9	.043*
Students' progress at own rate	7.845	6	.250

* $p < .05$.

4. DISCUSSION

This study included an exploratory approach to identify the types of instruction physical education teachers reported to use that fall under the categories of engagement, representation, and action and expression. Results suggest teachers are providing instructions with verbal directions and a demonstration. Following instructions, students' physically practice the motor skill while teachers give feedback and motivation. Results are consistent with Magill and Anderson (2012) which proclaimed the most prevalent forms of motor skill instruction are for a teacher to provide a demonstration and verbal instruction. Additionally, Van Munster et al. (2019) defined typical instruction in physical education as verbal directions on how to perform a skill, a modeled demonstration, and then children are expected

to perform the skill. Unfortunately, this instruction may be done without any adaptations for children with or without disabilities. Results suggest instruction has not changed in 30 years considering in 1994, an observation report on instruction in physical education found teachers provide mostly verbal instruction, maybe a demonstration, and then students perform the skill (Rink, 1994).

Results from the current study suggest teachers are providing minimal forms of representation such as pictures, video modeling, a task analysis, and written instruction to teach a new motor skill. Research has supported the use of visual pictures (H'mida et al., 2020; Morgan, 2019; Waugh et al., 2007), video modeling (Obrusnikova & Rattigan, 2016), a task analysis (Snodgrass et al., 2017), and written descriptions (Morgan, 2019) to teach motor skills. Therefore, teachers may benefit from training and professional development to support the use of these instructional strategies.

The lack of variety of instructional techniques that support UDL (i.e., video, pictures) could mean teachers either are unaware, not motivated, or are facing barriers towards inclusion of techniques. Scott (2018) revealed barriers to incorporating UDL from focus groups, observations, and interviews of 9 special education teachers. Results revealed barriers to including aspects of UDL such as support from classroom teachers and administration, knowledge of UDL, and training in UDL. Results suggest there is a need for more support, knowledge, and training for teachers so they can utilize UDL to support student learning.

Integrating multiple types of instruction in physical education is essential to help teach different types of learners (i.e., visual, verbal, kinesthetic learners; Silva et al., 2022; Smith & Renzulli, 1984). It is recommended to match instruction to students' learning styles to support learning (Smith & Renzulli, 1984). For example, visual learners benefit from demonstrations, pictures, videos, and written instructions. Kinesthetic learners are supported with visualizations/ mental imagery, verbal rehearsal, and writing. If a teacher only provides verbal instructions, verbal feedback, and motivation, children who learn visually and kinesthetically may be missing out on important pieces of instruction to support their motor development.

There is little known about the use of instruction based on experience and level. Strand and Bender (2011) examined physical education teachers' knowledge of appropriate instruction. Results suggest those with 20 or more years of experience scored higher than teachers with less experience and those teaching elementary and middle scored higher than high school

teachers. This may suggest teachers with more experience and at lower grades (elementary, middle) may know more about instructional practices. However, it is unknown the participants used the instructional practices.

The current study investigated if there were differences in the types of instruction provided based on years of teaching experience and the level taught. Results suggest there are differences among the instructions based on years of experience. Teachers with 11-15 years and 1-5 years of experience are integrating higher levels of instruction that support UDL while teachers with 6-10 and 15 or more years are using less aspects of UDL. Additionally, those with more years of experience use verbal directions, task analysis, pictures, and writing more than those with less experience. These differences may be due to the lack of training in UDL concepts by older teachers, with more years of teaching experience, and the response to learners needed by teachers who have taught for shorter periods of time.

4.1 Limitations and Future Research

The main limitation in the current study was the survey instrument. While the instrument has demonstrated internal validity through Cronbach alpha, the instrument has not been tested for content validity or reliability. Future research should use a validated and reliable instrument in order to determine the level of teaching practices that align to UDL. For example, the *Lieberman-Brian Inclusion Rating Scale for Physical Education (LIRSPE)* was determined as a valid and reliable tool to determine the effort made by teachers on inclusive practices (Lieberman et al., 2019). The LIRSPE is used to rate a physical education class on a scale from 1 (poor) to 5 (excellent) in the following areas; start of class, introduction, warm-up, speed of play, differentiated instruction, autonomy supported instruction, game/activity/team sport, and skill-related feedback.

Future research is needed that assesses the level of inclusion, or “effort made by the teachers to include children with disabilities in a general physical education environment” (Lieberman et al., 2019, p. 348). There are research articles describing the LIRSPE as a method to rate inclusion in physical education (Giese et al., 2022; Lieberman et al., 2019), but there are limited studies actually assessing inclusion in general physical education using this scale. Studies should examine teachers across different levels of years of teaching experience (i.e., 0-5 years, 6-10 years) since the current study found instructional differences among teachers’ years of experience.

Limitations on the current study include the context in which questions were asked. Participants reflected on their experiences teaching new motor

skills when answering the questions. There were no specific units of instruction identified. Therefore, participants may have identified with different teaching units (i.e., throwing, dance) when answering the questions which could have altered responses. Future research should consider physical education teachers instruction per the unit of instruction or task. Additionally, teachers could be utilizing instructional practices that fall under the categories of UDL due to good teaching practices, but they were not aware of the alignment. Future studies considering instructional practices utilizing UDL should make the participants aware of the UDL framework prior to data collection.

Another limitation in the survey is that it did not cover all aspects of UDL. There are many opportunities for student choice within UDL that should have been included in the current survey (i.e., choice in equipment, choice in target, choice in distance). Future research analyzing the use of UDL in physical education instruction should consider all aspects of instruction that support engagement, representation, and action and expression. Additionally, further questions would support understanding of which unit of instruction(s) teachers incorporate in the UDL approach. More research is needed assessing the level of inclusion made by the physical education teachers using the LIRSPE. Findings would support understanding of the types of instruction that physical education teachers are providing and the level of inclusion provided.

5. CONCLUSIONS

Physical education teachers are utilizing mostly verbal instructions with little incorporation of instruction that supports multiple means of representation and action and expression. Practical implications suggest physical education teachers need support, knowledge, and training for UDL. Future manuscripts should highlight the usefulness of the types of instruction teachers could be utilizing to support learning. Professional development, training, and webinars may be helpful next steps in order for teachers to learn how to incorporate more of a variety of instructional techniques.

6. ACKNOWLEDGEMENTS

6.1 Disclosure of Funding Sources

None.

6.2 Conflict of Interest

The authors have no conflicts of interest to declare.

7. REFERENCES

- Brian, J. A., Smith, I. M., Zwaigenbaum, L., & Bryson, S. E. (2017). Cross-site randomized control trial of the Social ABCs caregiver-mediated intervention for toddlers with autism spectrum disorder. *Autism Research: official journal of the International Society for Autism Research*, 10(10), 1700–1711. <https://doi.org/10.1002/aur.1818>
- Giese, M., Grenier, M., Lieberman, L. J., & Meier, S. (2022). Cross-Cultural Translation and Application of the Lieberman–Brian Inclusion Rating Scale for PE in German-Speaking Countries. *International Journal of Environmental Research and Public Health*, 19(13), 7891.
- Gilbert, E. N. (2019). Designing inclusive physical education with universal design for learning. *Journal of Physical Education, Recreation & Dance*, 90(7), 15-21.
- H'mida, C., Degrenne, O., Souissi, N., Rekik, G., Trabelsi, K., Jarraya, M., Bragazzi N.L., Khacharem, A. (2020). Learning a motor skill from video and static pictures in physical education students-effects on technical performances, motivation and cognitive load. *International Journal of Environmental Research in Public Health*. 4;17(23):9067. doi: 10.3390/ijerph17239067.
- Kennedy, W., & Yun, J. (2019). Universal design for learning as a curriculum development tool in physical education. *Journal of Physical Education, Recreation & Dance*, 90(6), 25-31.
- Lieberman, L. J. (2017). The need for universal design for learning. *Journal of Physical Education, Recreation & Dance*, 88(3), 5-7.
- Lieberman, L. J., & Grenier, M. (2019). Infusing universal design for learning into physical education professional preparation programs. *Journal of Physical Education, Recreation & Dance*, 90(6), 3-5.
- Lieberman, L. J., Brian, A., & Grenier, M. (2019). The Lieberman-Brian inclusion rating scale for physical education. *European Physical Education Review*, 25(2), 341-354.
- Lieberman, L. J., Grenier, M., & Brian, A. (2019). How inclusive is your physical education class? Introducing the Lieberman/Brian inclusion rating scale for physical education. *Journal of Physical Education, Recreation & Dance*, 90(2), 3-4.
- Lieberman, L. J., Grenier, M., Brian, A., & Arndt, K. (2020). *Universal design for learning in physical education*. Human Kinetics.

- Magill, R. A., & Anderson, D. I. (2012). The roles and uses of augmented feedback in motor skill acquisition. *Skill acquisition in sport: Research, theory and practice*, 3-21.
- Morgan, K. N. (2019). Using pictures and written descriptions for learning. *Strategies*, 32(6), 36–39.
<https://doi.org/10.1080/08924562.2019.1658431>
- Morin, A. (2015). Multi-sensory instruction: What you need to know. *Understood for Learning and Attention Issues*, 2016, 1–17.
<http://www.understood.org>
- Obrusnikova, I., & Rattigan, P. (2016). Using video-based modeling to promote acquisition of fundamental motor skills. *Journal of Physical Education, Recreation & Dance*, 87(4), 24–30.
- Rink, J. E. (1994). Task presentation in pedagogy. *Quest*, 46(3), 270–280.
<https://doi.org/10.1080/00336297.1994.10484126>
- Scott, L. A. (2018). Barriers with implementing a universal design for learning framework. *Inclusion*, 6(4), 274–286.
<https://doi.org/10.1352/2326-6988-6.4.274>
- SHAPE America. (2015). *The essential components of physical education*. Reston, VA:
<https://www.shapeamerica.org/uploads/pdfs/TheEssentialComponentsOfPhysicalEducation.pdf>
- Silva, A., Ferraz, R., Forte, P., Teixeira, J. E., Branquinho, L., Marinho, D. A. (2022). Multivariate training programs during physical education classes in school context: Theoretical considerations and future perspectives. *Sports (Basel)*. 10(6):89. doi: 10.3390/sports10060089.
- Smith, L. H., & Renzulli, J. S. (1984). Learning style preferences: A practical approach for classroom teachers. *Theory into practice*, 23(1), 44-50.
- Snodgrass, M. R., Meadan, H., Ostrosky, M. M., & Cheung, W. C. (2017). One Step at a Time: Using Task Analyses to Teach Skills. *Early Childhood Education Journal*, 45(6), 855–862.
<https://doi.org/10.1007/s10643-017-0838-x>
- Strand, B., & Bender, V. (2011). Knowledge and use of appropriate instructional strategies by physical education teachers. *The Physical Educator*, 68(1), 1–17. <http://dx.doi.org/10.1016/j.jaci.2012.05.050>
- Taunton, S.A., Brian, A., & True, L. (2017). Universally-designed motor skill intervention for children with and without disabilities. *Journal of Developmental and Physical Disabilities*, 29(6), 941–954.
<https://doi.org/10.1007/s10882-017-9565-x>
- The Center for Applied Special Technology (CAST). (2018). *About*. Retrieved from www.cast.org/our-work/about-udl.html#. WukPFdMvxME
- Tomlinson, C. A. (2000). Differentiation of Instruction in the Elementary Grades. ERIC Digest.

- Ulrich, D.A. (2000). Test of Gross Motor Development. Examiner's manual (2nd ed.). Austin, TX: Pro-Ed.Inc.
- Van Munster, M. A., Lieberman, L. J., & Grenier, M. A. (2019). Universal design for learning and differentiated instruction in physical education. *Adapted Physical Activity Quarterly*, 36(3), 359-377.
- Waugh, L., Bowers, T., & French, R. (2007). Use of picture cards in integrated physical education classes. *Strategies*, 20(4), 18-20.