

How Movement Habits Become Relevant in Novel Learning Situations

Dean Barker,^{1,2} Hakan Larsson,^{3,4} and Gunn Nyberg^{5,6}

¹School of Health Sciences, Örebro University, Örebro, Sweden; ²Department of Primary and Secondary Teacher Education, Oslo Metropolitan University, Oslo, Norway; ³Department of Teacher Education and Outdoor Studies, Norwegian School of Sport Sciences, Oslo, Norway; ⁴The Swedish School of Sport and Health Sciences (GIH), Stockholm, Sweden; ⁵Department of Teacher Education, Dalarna University, Falun, Sweden; ⁶Department of Sport Science and Physical Education, University of Agder, Kristiansand, Norway

Purpose: To (a) present a theoretical framework that describes how learners' movement habits become relevant in the development of movement capability and (b) present data that illustrate how this process occurs in practice. **Method:** An investigation with preservice physical education teachers was conducted in two phases. The first phase involved examining participants' movement habits, and the second phase involved examining the participants' development of novel capabilities in the context of unicycling. **Results:** Empirical materials from two participants are presented as case studies. The cases demonstrate how different sets of movement habits interact with novel tasks, making the demand for creative action more or less likely. The cases also demonstrate how subjective and physical elements are interwoven. Finally, the cases provide insights into potentially productive habits for movement learning. **Discussion/Conclusion:** The paper is concluded with pedagogical implications, including a consideration of how crises might be managed in educational contexts.

Keywords: movement capability, pragmatism, case study, embodied learning, differentiation, Dewey

Scholars have claimed that a person's physical and psychological characteristics affect how they develop movement capability (Barker et al., 2020a; Chow & Atencio, 2014; Renshaw & Chow, 2019). Physical characteristics refer to features such as a person's strength, height, and flexibility, whereas psychological characteristics include maturity and confidence, for example. Other researchers have pointed to learners' previous movement experiences, suggesting that learners tend to adopt unique sets of strategies when learning new movement tasks (Nyberg et al., 2020, 2021). Indeed, the notion that individuals approach learning tasks based on their unique attributes and preferences underpins a wealth of claims made for constructivist, learner-centered, and developmentally appropriate approaches in physical education (PE) research (e.g., Colquitt et al., 2017; Jarvis et al., 2017; Lindgren & Barker, 2019). At the same time, relatively few empirical investigations have attempted to connect learners' earlier experiences with the process of learning. Our dual aim in this paper is to (a) present a theoretical framework that describes how learners' movement habits become relevant in the development of movement capability and (b) present

data that illustrate how this process occurs in practice. Addressing this dual aim is worthwhile because it is centrally related to pedagogy: Without an understanding of how learners' movement habits are relevant to learning, physical educators are relatively powerless to make intentional decisions about learning (Tinning, 2009). To achieve our aim, we present two cases of movement learning wherein we first describe the learners' movement habits before describing the learning that takes place when they are faced with a novel task. We adopt a pragmatist theoretical perspective (Biesta & Burbules, 2003; Dewey, 1922/1957, 1938/1997) to frame the cases, drawing primarily on Shilling's (2008) work on habits, crises, and creativity. This framework provides a compelling way of conceptualizing personal change and continuity over time.


Background

The volume of scientific literature focusing on movement capability and learning has increased considerably in recent years (Coker, 2018; Larsson, 2021). "Learners" have garnered increasing interest in this literature (Barker, Nyberg, & Larsson, 2021). Constraints-led approaches have been influential in drawing attention to learner characteristics. From a constraints-led perspective, learners have unique *constraints* and *affordances* that allow them to move in certain ways (Renshaw et al., 2010; Roberts et al., 2019). Constraints and affordances include a person's physical characteristics, such as strength, height, flexibility, skill level, posture, and physical fitness (Atencio et al., 2014; Correia et al., 2019), and—less frequently discussed—psychological characteristics, such as emotions and level of confidence (Renshaw & Chow, 2019).¹ When learning to move in new ways, an individual's characteristics interact with the physical (Atencio et al., 2014; Chow et al., 2007) and cultural (Uehara et al., 2016) demands of the task and of the environment, the interaction resulting in the emergence of specific movement patterns. Gorman et al. (2021) provided a

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Larsson  <https://orcid.org/0000-0002-0638-7176>

Nyberg  <https://orcid.org/0000-0002-5656-6500>

Barker (dean.barker@oru.se) is corresponding author,  <https://orcid.org/0000-0003-4162-9844>

relatively rare example of an empirical investigation based on a constraints-led approach in an education setting, examining how hand size influences children's use of different sized basketballs.

Other studies have focused on observable *and* experiential features of individuals that characterize their development of movement capability (Lambert, 2020; Larsson et al., 2021). Lindgren and Barker (2019) examined high school pupils' dispositional learning during a teaching module focusing on movement capability. The authors suggested that changes to pupils' dispositions over time could be discerned not only in the pupils' movements but also in their approaches to practicing and their descriptions of their learning experiences. In a similar school-based investigation, Rönnqvist et al. (2019) observed that learners' attentional foci and qualitative understanding of the tasks that they were undertaking changed as they gained proficiency. Neither of these investigations, however, considered systematically the characteristics that learners brought to the task. Nyberg et al.'s (2020, 2021) work has addressed more directly what learners bring to the task when examining the approaches they use to develop movement capability. Nyberg and her colleagues' research suggests that individuals utilize distinct learning strategies when developing new movement capabilities and that individuals adopt distinct combinations of strategies.

With respect to pedagogical implications, the scholarship examined thus far supports learner-centered approaches. Correia et al. (2019), for example, concluded that teachers should gather information about students' age and past practice experiences before beginning instruction, whereas Brymer and Davids (2014) proposed that teachers need to understand learners' needs to be able to manipulate environmental conditions in effective ways. Such recommendations are thoroughly consistent with educational literature that advocates differentiated approaches to PE (Colquitt et al., 2017; Heidorn & Mosier, 2019; Whipp et al., 2014) and, to an extent, more general calls for "developmentally appropriate" movement education (Chen et al., 2017). Research advocating differentiation in PE recommends that teachers ensure that pupils learn from their own individual starting points (Jarvis et al., 2017) and that teachers make ongoing modifications to lessons in response to students' needs, interests, and readiness (Smith, 2005). We take no issue with the idea of learner-centered pedagogies and agree that understanding learners is essential for effective teaching. At the same time, given the considerable advocacy for learner-centered approaches, we find it surprising how few empirical investigations examine the relevance of individuals' movement habits to learning situations. It is this omission that we address in the following sections.

Theoretical Framework

To theoretically frame our work, we make use of pragmatist concepts (Dewey, 1922/1957, 1938/1997). Dewey's (1922/1957, 1938/1997) extensive writing on human conduct provides the foundations for thinking about individuals' existing ways of moving as *habits*. For Dewey (1922/1957), habits are acquired predispositions to respond to environmental conditions in certain ways (see also, Biesta & Burbules, 2003). Shilling (2008) expanded on this, suggesting that habitual action involves "routinised modes of behaviour that are more or less effective in 'joining' [individuals] to, and enabling them to manage, their surroundings" (p. 12). From a pragmatist perspective, we might think of a soccer player's typical responses on the field as part of a mode of behavior that enables her to participate in soccer-related environments. Importantly, habits are understood as—often deeply—embodied ways of acting that help to constitute the self (Biesta & Burbules, 2003; see also Aarskog et al., 2019; Maivorsdotter &

Quennerstedt, 2019, in the context of PE). Furthermore, habits are not purely personal because they incorporate social expectations, physical objects, and tools. It is difficult, for example, to become "a soccer player" without a ball, an understanding of the rules and purpose of the game, and other persons with whom one can play.

Dewey (1922/1957) saw habits as necessary in every aspect of life because they allow people to function without having to simultaneously attend to all environmental stimuli. At the same time, habits can become problematic when a person's circumstances change, and new ways of responding to the world are necessary. Although Dewey (1922/1957) referred to "indeterminate situations" (see also Aarskog et al., 2019; Quennerstedt et al., 2011), Shilling (2008) described such situations as *crises* and used examples of losing one's job or falling ill as examples. Following Shilling (2008), we suggest that in educational settings, learners frequently enter crisis situations wherein their habitual responses do not initially meet the demands of the context. In such situations, individuals may develop new ways of being in the world. From an educational perspective, crises can be seen as containing learning potential.

Crises can be experienced by individuals as anything from minor irritation to doubt in one's physical and intellectual capabilities (Shilling, 2008). If people do not manage to change their habits, they may find themselves unable to thrive. Crises are, therefore, not something that people normally enjoy. To overcome crises, some form of *creativity* is necessary, generally involving reflection and an engaged deliberation with one's surroundings (Shilling, 2008). Creativity may involve recalling alternative ways of being or rehearsing prospective lines of action to determine new lines of behavior. When individuals engage in creative action, they develop new relations with the environment, and creativity is often experienced positively by the individual (Shilling, 2008). Emotional experiences associated with creativity can include fulfillment, feelings of contentment and pleasure, and a higher sense of equilibrium with the world (Shilling, 2008). In the next section, we describe our approach to generating empirical material that illustrates the notions of habit, crisis, and creativity in a movement education context.

Method

To address our dual aim, we designed an investigation with two phases. The first phase involved examining learners' movement habits. The second involved examining how those individuals developed new capabilities in a novel movement learning situation. In both phases, our overall approach was interpretive (Denzin & Lincoln, 2005), and we produced qualitative data that allowed us to create thick descriptions of learners' habits and learning processes.

Phase 1: Examination of Participants' Movement Habits

Sample and Recruitment

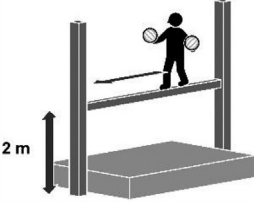



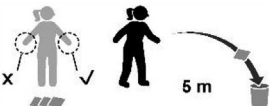
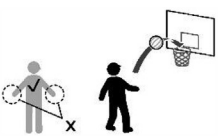


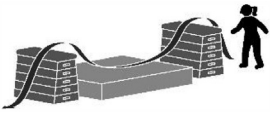

Data were generated with preservice PE teachers studying at a university in southern Sweden. At the time of the investigation, 21 preservice PE teachers were enrolled in a didactics course. All were invited to take part in the investigation as a result of their participation in the course. Eleven agreed to participate in Phase 1 (eight men and three women—from now referred to as "participants"). The participants explained their voluntary involvement in terms of curiosity in the project and/or wanting to help the researchers. To ensure thick descriptions can be presented, data from two participants are included in the "Findings" section (see "Data Analysis" subsection for further sampling considerations).

Procedures

The participants took part in a qualitative movement analysis session in which they were presented with 10 movement tasks (see Table 1). Each task provided opportunities for different movement responses.

Following our pragmatist approach (Dewey, 1922/1957; Shilling, 2008), the objective with these sessions was to gain a sense of the participants' typical responses to movement situations. We wanted to determine responses that "felt right" to the participants rather than

Table 1 Tasks for Movement Analysis Sessions

Task picture	Task description	Instructions	Habits potentially evoked
	Task 1. Traverse a 4-m beam that is 2 m above the floor carrying 0–3 medicine balls.	No time limit, participants could choose how many balls to carry and how to carry them, two attempts if desired.	Balancing, overcoming fear of personal harm in response to being off the ground, inclination to challenge oneself.
	Task 2. Use a skateboard to cross the gym (approximately 15 m).	No time limit, two attempts if desired, participants can decide how to use the skateboard.	Balancing, overcoming fear of personal harm in response to being on an unstable object.
	Task 3. Circumnavigate a vaulting box while standing on a Swiss ball and using the box for balance.	No time limit, as many attempts as desired were permitted.	Balancing while coordinating upper and lower body, overcoming fear of personal harm in response to being on an unstable object.
	Task 4. Transition from standing position on a vaulting box to a lying position on an adjacent fat mat.	No time limit, participants could choose height of box and how to transition, two attempts if desired.	Overcoming fear of personal harm in response to falling and not being on one's feet.
	Task 5. Throw 3 beanbags into a bucket that is 5 m away consecutively with nonpreferred hand. If they miss one, they need to start again.	No time limit, but participants were stopped after 5 min.	Accurate launching of projectile with hands, demonstrating persistence in response to possibility of not fulfilling instructions.
	Task 6. Get a volleyball through a basketball hoop at standard height. The last body part that touches the ball before it goes through the hoop cannot be the hands.	No time limit, but participants were stopped after 5 min. Participants could stand as close to hoop as they liked. If a participant succeeded within 5 min, they were invited to try a different body part.	Accurate launching of projectile without hands, demonstrating persistence in response to possibility of not fulfilling instructions.
	Task 7. Perform a 180° or 360° jump turn and land in a stable position.	Two attempts if desired.	Coordination of multiple parts of one's body in space and time when not in contact with the ground.
	Task 8. Throw a tennis ball into the air, perform a rotation, and catch the ball again.	Three attempts if desired, participants were invited to interpret "rotation" as they liked.	Manipulating an object and coordinating multiple parts of one's body in space and time when not in contact with the ground.
	Task 9. Move across and over a vaulting box, a fat mat, then another vaulting box, and then return the same way.	No time limit, two attempts if desired, the participants could choose with which speed they completed the task.	Moving with explosivity and agility and coordinating multiple parts of one's body in space and time when in contact with the ground.
	Task 10. Balance on a Swiss ball without touching the floor.	No time limit, but participants were stopped after 5 min. Participants were invited to use the ball in any way they found effective.	Balancing.

“measure” what they could do. Each task invited the participants to move with varying combinations of accuracy, balance, agility, explosivity, and coordination. The tasks were also designed so that they might elicit emotional responses, such as enjoyment, anxiety, frustration, and boredom. Task design occurred with Phase 2 of the investigation in mind, and tasks were expected to elicit responses that the participants might also demonstrate in the second phase. Participants were asked to perform each task with simple, standardized instructions. In line with the dual aim of the investigation, though, instructions allowed for participant interpretation and varied responses.

Each session lasted for just under an hour. Sessions were video recorded, and informal conversations that took place between participants and researchers were captured in these recordings. Following each session, participants took part in semistructured interviews (Rapley, 2004). Interview questions covered the participants’ (a) sporting and movement backgrounds and (b) experiences during the analysis session. Interviews were conducted within 2 days of the analysis session, lasted 15–25 min, and were recorded using a cloud-based video conferencing service (Zoom). Participants also filled out a written survey containing the questions: Can you describe your background when it comes to movement and physical activity? How would you describe yourself when it comes to learning physical skills? Would you say that you are unique in any way when it comes to either doing physical skills or learning physical skills? What advice would you give to a coach who was going to help you to learn a skill that you had never done before?

Data Analysis

Analysis of data from Phase 1 involved four steps. First, the first author viewed the film clips of all 11 participants’ analysis sessions. Using a purposive sampling strategy and with a view to maximizing variation in terms of their responses to the tasks (Gobo, 2004), the first author chose two of these participants as cases (Flyvbjerg, 2006). Of the 11 participants, the first one responded to Phase 1 with the most obvious anxiety and hesitation, whereas the second participant responded with the least. The first author reviewed the two participants’ clips while creating detailed textual accounts of their movement responses. This process began as note taking and developed into free-flowing writing. The result was an extensive description of the participants’ responses to the movement tasks with which they were presented. The descriptions contained both researcher descriptions and the participants’ own comments from the interviews and written forms. In the final step, all three authors read the descriptions, viewed the film clips, and edited the final descriptions of the participants’ habits. This last step involved making decisions about how to condense the descriptions and how to represent the participants’ movement habits in ways that reflected both observer and participant points of view.

Phase 2: Examination of How Participants Developed New Movement Capabilities

Design

Phase 2 involved examining how the participants developed movement capabilities in a novel movement learning situation. The situation under examination involved exploring the practice of unicycling for 90 min per day for five consecutive days. During the sessions, the student group was divided into two separate groups. In each group, the students worked alone, in pairs, and in smaller groups. Equipment such as vaulting boxes and booms were set up as

supporting structures. The course lecturer had responsibility for the sessions, beginning and finishing each session with organizational instructions and comments concerning progress and safety. The module was underpinned by the notion of kinesio-cultural exploration (Barker et al., 2022), which: (a) encouraged learners to experiment with movement tasks, (b) drew learners’ attention to various biomechanical and cultural qualities of moving, (c) invited learners to consider attributes that may be useful for moving in particular ways, and (d) stressed the importance of alternating between practice and reflection. More information on the notion of kinesio-cultural exploration can be found in (Barker et al., 2022). Neither the lecturer’s nor the researchers’ actions were designed to instruct the students how to unicycle in an ideal way. Rather, their actions aimed to help students experiment with, and reflect on, ways of moving with a unicycle.

Data Production Procedures

During Phase 2, data were produced using three methods: (a) observations, (b) interviews, and (c) participant diaries. Observations were carried out by the three authors with the assistance of the course lecturer. One researcher and the lecturer circulated in the learning environment with chest-mounted GoPro video cameras (GoPro). They filmed individual students and groups of participants, remaining with individuals/groups for 5–15 min at a time. The other two researchers conducted observations using video conferencing software. Participants were asked to set up tablet computers running the software in a way that the researchers could observe unicycling attempts and ask participants questions if necessary (see the following).

In addition to observing, the researchers engaged the participants in ethnographic-type conversations (Spradley, 1979) during the sessions. Conversations focused on motives and evaluations (e.g., Why have you chosen this task? Which way do you find easiest?) and were recorded using the cameras and the video conferencing program. The use of these conversations means that the empirical work could be described as a type of “participant observation” (Angrosino, 2005) wherein, as researchers, we took part in the module as “interested physical educators.”

Finally, participants kept learning diaries (Barker et al., 2020a,b) in which they recorded reflections. Diaries were logged electronically using the university’s learning platform. Approximately 15 min of each 90-min session were devoted to diary writing. To structure the use of the diaries and to stimulate reflection, the participants were provided with questions such as: “What factors helped/hindered you in your learning today?” “What did you pay particular attention to when you were practicing?” “Did any problems arise when you were learning to move?” and “How do you typically solve problems during these learning sessions?”

Data Analysis

As in Phase 1, analysis took place in steps. The first author started by viewing all video material and noting the extracts in which the two participants were in frame (approximately 160 min per participant). Focusing on one participant at a time, the first author then reviewed the video material and compared it with the participants’ diary entries. During this process, he made detailed notes concerning the actions and comments of the participants. The theoretical framework guided this process, and the concepts of habit, crisis, and creativity were used to categorize extracts of the participants’ data. From these notes, descriptions of how the participants’ habits became relevant in their experiences of unicycling were created. Once the two descriptions had been created, the three authors read the descriptions, viewed the film clips, and developed the final description for the manuscript.

Ethical Considerations

Ethical approval was granted by a regional research ethical review committee. The research was conducted in accordance with the Swedish Research Council's ethical guidelines. Participants were informed about the project, its purpose, and how collected material would be used. Informed, active consent was obtained from the participants. Participants had the possibility to cease participation in the project at any time. The use of video cameras raised issues of confidentiality, possibilities for anonymity, and privacy for all participants. Video-filmed material was only used for research purposes and was stored in a manner that prevented unauthorized use. Anonymity was not possible or desirable in the analysis of the data. Instead, we aimed for anonymity in the publication of the research results. This involved using pseudonyms and excluding information that could be used to identify participants.

Findings

In this section, we present findings from two participants: Ellen and Jacob. Reflecting the two phases of data production, we start with the participants' movement habits and then progress to how the participants developed new movement capabilities. We have attempted to avoid simplification by including some of the contradictions in the participants' data. Still, we believe it is important to acknowledge the limitations of presenting multiple forms of verbal, textual, and video data in textual format.

Ellen's Movement Habits

Ellen is in her early 20s. She played soccer and indoor hockey from around the age of five but stopped several years ago when she finished high school. Ellen was hesitant about participating in the movement analysis session. She said that she was not built like most of her colleagues and was not a stereotypical Physical Education Teacher Education student. She was concerned that she might not be able to perform the tasks as well as her peers and that this could make her stand out.

During the analysis session, we identified several recurring movement responses. Consistent with her decision to participate in the project, Ellen was inclined to take up challenges. With the exception of traversing the high beam (Task 1), she attempted all tasks. She commented that she felt quite confident that she could attempt the tasks involving balls, confidence that she put down to previous sporting experiences. She also said in her postsession interview that she could "see" what was required in all the tasks, even if she could not always achieve it. Her subjective understanding of what was expected and her confidence to attempt the tasks were manifested in controlled movements on most of the tasks and persistence throughout the session.

Ellen could not bring herself to traverse the high beam and hesitated with moving from vaulting box to the fat mat (Task 4). In both tasks, Ellen was concerned with risk of physical harm. In the first case, she climbed down from the beam after a couple of minutes, saying "I'm scared I'm really scared I'm shaking." In the second case, Ellen eventually performed a slow roll from the small box on to the mat. Ellen's concern with injury arguably encompassed psychological harm or embarrassment. During the "ball throw and rotation task" (Task 8), she completed the task by throwing the ball, spinning on her feet, and catching it. She considered attempting a more dynamic "forward roll and catch," but after preparing herself and taking a breath by the mat, she backed out, saying "No, I'm done."

Ellen explicitly pointed to what she felt were her body's limitations. During the session, Ellen made comments such as "Maybe I'm too heavy for this" or "I don't have enough strength to support myself." In the postsession interview, she stated that she wanted to do the third task as best she could "given [her] condition." She returned to this idea later in the interview, noting briefly that her physical condition affected what she thought that she could do. These kinds of reservations about one's body were rare among the preservice PE teachers but not entirely absent.

Jacob's Movement Habits

Jacob had played soccer since he was four. He had done various types of skiing from an early age, including cross-country, slalom, and freestyle. At the time of the investigation, he participated in weight training and calisthenics. He mentioned that he had played "a little tennis, table tennis and paddle tennis" and that he had a broad repertoire of sporting experiences. Directly after his movement analysis session, Jacob said that most of the tasks in the session reminded him of school PE and that he liked that "it was possible to fail."

Jacob tended to respond to movement tasks with efficiency and accuracy, and he completed most of the tasks with apparent ease. He displayed reflective strategies to achieve efficiency. When trying to get the volleyball into the basketball hoop (Task 6), he quickly and repeatedly returned to the same position under the hoop for the next attempt and continued with the same body part until he succeeded. In the bean bag throwing task (Task 5), he maintained the same body position, explaining that if he isolated the throwing motion, he would only need to adjust the weighting of the throw. The condition to use his nondominant hand appeared perplexing to Jacob precisely because it led to less efficient and accurate performances. He said in his interview that "I'm not used to throwing with the wrong hand . . . you hardly ever use your non-preferred hand I always use my right hand if I'm throwing or catching in everyday life."

In most cases, Jacob responded in a way that he felt was satisfactory, but when he did not, he became frustrated. In Task 5, he managed to get the ball in the hoop using two different body parts. In Task 6, he managed to get many bean bags close to the bucket and two in the bucket. In both cases he became frustrated, wanting to continue Task 5 when his time was up and crying out "No!" a number of times and making noises of exasperation. At one point, he joked that the researchers might fall asleep if he did not get a ball in the hoop soon. One of us felt compelled to remind him that we were not trying to measure him.

Ellen: Movement Habits, Crises, and Creativity

Ellen's inclination to respond to challenges with curiosity and perseverance gained relevance in the first two sessions. She made dozens of attempts to unicycle, experimenting with the support of wall bars, beams, and vaulting boxes. She tested unicycles with different sized wheels, adjusted the saddle height, and took her shoes off, stating that this allowed her to get a better feel for the pedals. Over the two sessions, she became more stable on the saddle and could more consistently push down one pedal (a half rotation) and ride a meter before jumping off the unicycle. Midway through the second session, Ellen managed to push down the first pedal and follow it with most of the second pedal, before falling onto her backside. Her longer ride was met with praise from a male colleague and some laughter from a female colleague. Ellen got up

quickly and returned for her next attempt. After the first session, she wrote: “I’m a stubborn person and I really want to learn new things. That this was difficult made me even more motivated to learn it.”

Ellen’s tendency to challenge herself did not rule out the significance of other responses. Her concern with risk of harm was evident at the outset when she opted to wear a helmet. After the first session, she wrote in her learning diary that she experienced a “type of fear [that comes when] you have to do things that you’re not used to doing.” Her concern diminished over time, though, and Ellen took the helmet off early in the first session, saying it restricted her field of vision. She reflected after the second day that she did not feel the same fear as on the previous day, writing that “it’s actually really rare that you land badly and get hurt.” Tied to her fear, Ellen alluded to her body’s “possibilities” for unicycling. She said, for instance, that she was sure that the cycle could take her weight but that she still felt insecure once she was sitting on the unicycle.

Over the third, fourth, and fifth sessions, her responses became less characterized by experimentation and more by persistence and repetition. She settled on a position between two vaulting boxes as her most comfortable starting option. The length of her rides increased, and instead of half and full pedal rotations (1–2 m), Ellen regularly managed one and half and two full pedal rotations (3–4 m) and, on occasion, four pedal rotations (8 m). Ellen used all available time for practicing and was one of several participants to continue when the session was finished. At the end of the third session, Ellen wrote that she was surer of her balance, that she was making progress, and that she was more confident.

Despite growing confidence, responding with attempts ranging from 1 to 4 m with sporadic longer rides persisted in the fourth and fifth sessions. Ellen became frustrated with her “short,” half-rotation rides. She did not mention apprehension explicitly in the latter sessions; however, her tendency to jump off the unicycle appeared to suggest that she felt vulnerable when she was trying to balance, an interpretation consistent with her responses to the balance tasks in Phase 1. A tendency to worry about her body’s possibilities resurfaced after the fourth session. She put one of her colleague’s longer rides down to his “strong drive to succeed,” adding, “He’s done sports that require physicality and complete focus and concentration . . . I think it could also have something to do with one’s build—I’m just thinking out loud here.” After the final session, Ellen seemed to reconcile her unicycling experience with her expectations. She wrote that she was disappointed that she could not ride further but, at the same time, felt “very happy and proud that she had come this far.”

Jacob: Movement Habits, Crises, and Creativity

Jacob spent much of his time working with Sara, a peer who had unicycled before and could regularly ride 10–20 m, albeit with limited control. The two formed a type of novice–expert relationship. Sara provided continual advice about, for example, body tension, eye focus, and choice of unicycle size. She offered Jacob her arm so that he could ride with support and gave him encouragement when he showed signs of progress. Jacob, for his part, listened to Sara, watched others in the class, and spent much of the first session balancing on the unicycle with support and making attempts to ride. After a series of quarter- and half-rotation rides, he succeeded with a complete pedal rotation. He responded with enthusiasm, saying, “That’s a little better!” Nonetheless, at the end of the first session, Jacob appeared not to have met his expectations and was critical of his performance. He wrote that unicycling was “much more difficult than I expected . . . I often

came off the back of the unicycle and had trouble leaning forward. I wasn’t that good at reflecting on what I could do differently—I just made attempt after attempt.”

Jacob spent much of the next day taking off from between two vaulting boxes. Leaning forward appeared to define his idea of efficient practice initially. He typically rode 2–4 m while pedaling quickly, then curved to one side as he started to lose balance. Unlike Ellen, Jacob did not settle into a particular practicing routine. He continued to seek and make use of colleagues’ advice during the session. Sara suggested using arms for balance. Another peer told Jacob to concentrate on pedaling smoothly. Despite dozens of unsteady rides of 2–4 m, his rides became longer and more controlled.

Jacob’s tendency to strive for increased movement efficiency continued in the third and fourth sessions. Despite growing control, consistency, and distance at the start of the third session, he was unhappy with his progress:

Jacob: I have never been so bad at anything in my life.

Sara: You’re just not used to being bad at something.

Jacob: I’m having an identity crisis [short laughter].

Researcher: Oh, that’s good. I can use that in our research! But seriously, tell me why you said that.

Jacob: I normally have things easy. Everything I try, I can do after half an hour. I’m completely ok at everything . . . No, it’s [unicycling’s] hard.

Jacob’s disappointment may have been heightened by his awareness of others. For around 10 min in the third session, Jacob competed with two colleagues, setting the length of their rides against one another. Although Jacob completed his own longest ride by far in this time (approximately 40 m), his two colleagues exhibited more control and cycled further, on average, than Jacob. Jacob’s summary of the session was that it had been “a really bad day . . . it took me 50 tries just to get into it and then time was up.” In the fourth session, he opted to work with two different colleagues, half joking that he had a better chance of performing better than them. Unlike Ellen, Jacob had several peers in his group who had unicycling experience. These peers started to perform tricks in the third and fourth sessions while Jacob was still attempting to stay on the saddle.

On the final day, Jacob continued with erratic attempts, cycling anywhere between 1 and 20 m. He continued to seek help—Sara suggested that Jacob play circus music in his head, for example, which he said that he did. One of the colleagues whom Jacob had felt better than the previous day managed to cycle across the gym, at which point Jacob joked that he was going to give up and go home. Soon after, though, Jacob also cycled the length of the gym, celebrating with, “Oh fuck! I’m so good! . . . Look I’m riding back again!” Soon after, he rode approximately 30 m, turned, and rode back. His final diary entry stated, “Today, I got it. I cycled for about 30 s and turned twice. Sad to say that’s the last time I’ll get to cycle. But at the end, I could cycle a while and oh, how happy I was.”

Discussion: Theorizing Movement Learning in Terms of Habits, Crises, and Creativity

Theorizing learning in terms of creativity and the development of new ways of responding to the environment (Dewey, 1922/1957; Shilling, 2008), both cases demonstrate how movement habits can gain relevance in learners’ development of capability. In Ellen’s exploration of unicycling, her habits of challenging herself and

persisting were sufficient to respond to the demands of the “unicycling environment” in such a way that she avoided crisis. She participated in all sessions while, for the most part, preserving physical and emotional equilibrium. Her tendency to emphasize her body’s limits and judge herself as less capable than some of her colleagues can, in one sense, be seen as habitual incorporations of social norms wherein (a) large bodies are viewed as less able than smaller ones (Barker, Quennerstedt, et al., 2021) and (b) female bodies are viewed as less able than male bodies (Lambert, 2020; Young, 1980). Somewhat paradoxically, embodying these expectations enabled her to interact with the novel situation without significant impulse for the reconstruction of personal habits.

Jacob’s habit of moving with relative efficiency and accuracy, in contrast, proved unsustainable and resulted in the discomfort that Dewey (1922/1957) and, later, Shilling (2008) have associated with discontinuities between a person’s actions and the environment. Jacob engaged in strategies such as changing groups and the more conventionally masculine deployment of humor to alter his relation to the environment and mitigate his unease. Yet his expressions of failing to meet the sociophysical demands of the unicycling sessions were also connected with creative action. He engaged in the same kind of reflective actions (Aarskog et al., 2019) that Ellen started out with but persisted with them for the duration of the module, constantly attempting to discover strategies for “successful” unicycling and to achieve an identity as a proficient unicyclist.² His creative actions eventually led Jacob to enlarge his agential field of action (Dewey, 1922/1957).

A pragmatist theorization of the two cases raises important issues in relation to existing knowledge about learners in movement education contexts. First, and somewhat simply, Ellen’s and Jacob’s cases support the idea that individuals bring unique sets of embodied characteristics—characteristics that we have captured through the notion of habits—to movement education situations (Atencio et al., 2014; Correia et al., 2019). The cases underscore the distinctive impacts that these habits have on the development of movement capabilities, thus adding weight to the pedagogical claim that ascertaining learners’ existing knowledge is an indispensable task for teachers (Colquitt et al., 2017; Heidom & Mosier, 2019).

Second, the cases encourage educators to rethink how learners “meet” learning situations. Differentiation literature in PE typically foregrounds *readiness*, or “the sum of prior learning experiences, attitudes, and cognitive aptitude” (Colquitt et al., p. 45), and *interest*, which refers to learners’ motivation in a particular task (Whipp et al., 2014). When a person struggles with a novel task, traditional differentiation principles encourage us to ask: Is the learner ready for the task? and Is the learner interested in the task? Yet the first question is based on a cumulative logic (e.g., Barker et al., 2017; Chen et al., 2017), and the second locates responsibility for engagement with the learner (Lambert, 2020). A pragmatist reading of Ellen’s and Jacob’s results suggests that learners are not simply adding to what they have but, rather, transforming themselves. A pragmatist reading further suggests that learners are not in complete control of their transformation and that individuals may experience learning as difficult and frustrating not because they are immature or uninterested but because transformation occurs in uncontrollable, nonlinear (Atencio et al., 2014; Renshaw & Chow, 2019) and uncomfortable (Shilling, 2008) ways. Expressions of struggle such as those displayed by Jacob and, to a lesser extent, Ellen may be promising signs for pedagogues that learning is occurring, a point to which we shall return in our conclusion.

Third, and in line with Smith’s (2005) claim, the cases suggest that profiling learners and avoiding “one-size-fits-all” teaching is a complex business. Unlike readiness and interest (Colquitt et al., 2017), habits are not easily quantified (see also Heidom & Mosier, 2019). From a pragmatist theoretical perspective, it is more apt to think of individuals’ habits as dynamic and only knowable in relation to something else. From here, it is not particularly appropriate to assess whether learners have *enough* knowledge to engage with a certain task, and ability categories such as “beginning,” “intermediate,” and “advanced” (Whipp et al., 2014) might conceal rather than reveal pedagogically useful information about learners. Pedagogical lines of inquiry about learners that accord with pragmatist principles (Dewey, 1922/1957, 1938/1997) could, instead, include questions such as: How comfortably do learners’ movement habits fit with the educational context provided? Are learners likely to experience crises and, if so, in which ways? And how can teachers enable learners to find creative strategies to deal with crises? In short, a pragmatist reading suggests that all people can be “ready” for learning if they are supported in appropriate ways. Entertaining the idea that anyone can learn may help physical educators escape the persistent assumptions in PE circles that some people are more suited to developing movement capability than others (Lambert, 2020; Nyberg et al., 2020) and that learning should occur in a smooth and enjoyable manner.

Finally, the two cases appear to suggest that learners’ subjective experiences of the learning situation play the decisive role in the development of movement capability, a claim consistent with some existing literature (Rönnqvist et al., 2019). For instance, from Ellen’s case, we could claim that if a person does not experience a situation as a crisis, then creative action—and, thus, learning—will not ensue. From a pragmatist stance, though, the “primacy of experience” thesis is unsustainable as without one’s feet moving the pedals or one’s backside slipping off the saddle and connecting with the floor, there is nothing to be experienced. As in a constraints-led perspective (Renshaw & Chow, 2019), the subjective and the objective must “bump into” (Shilling, 2008, p. 9) one another (see also Larsson et al.’s, [2021] Deleuzian interpretation of movement learning). In terms of understanding how an individual’s movement habits become relevant in novel learning situations, then, it is necessary to understand how observable changes occur with subjective or reported changes. Here, the cases raise a significant question for further research in that learners’ descriptions of change rarely occurred synchronously with observed changes (Nyberg, 2014). On the contrary, both Ellen and Jacob developed erratically, without being able to describe why they cycled several meters 1 min and jumped off after half a meter the next.

Concluding Thoughts

The dual aim of this paper has been to (a) present a theoretical framework that describes how learners’ movement habits become relevant in the development of movement capability and (b) present data that illustrate how this relevance occurs in practice. To achieve this aim, we developed an investigation with preservice PE teachers in two phases. The first phase involved examining the participants’ movement habits, and the second involved examining how the participants developed new capabilities in a novel movement learning situation. Based on the two cases, we have suggested that individuals bring unique sets of embodied responses to movement education situations and that these responses affect learning. We have further proposed that the cases invite pedagogues to

rethink how learners encounter new learning situations and that evaluating learners in terms of readiness and interest may not be advantageous when it comes to facilitating learning. We have contended that avoiding a one-size-fits-all approach is complex if one adopts a pragmatist approach, largely because pragmatism resists common measures of learners. And finally, we have suggested that accounting for the observable and subjective dimensions of movement learning is a necessary but challenging task that needs to be better understood if educators are to help learners develop movement capability.

We want to conclude with several brief remarks about practical implications. First, scholars have recommended that physical educators plan for student-centered learning. After our empirical work with preservice PE teachers, this strikes us as a highly complex task, especially given that most learners in PE contexts have a range of habits that interact with multiple, and often dynamic, environmental factors. Rather than reduce this complexity, pragmatist theory might provide useful pedagogical questions to ask. Employing notions such as habits, crisis, and creativity can generate practical questions for teachers, such as: What movement habits do my pupils exhibit? And which habits are potentially relevant to the learning goals of the class? Such questions could be addressed systematically as we have done in this investigation with qualitative movement analysis-type sessions (see Phase 1 in “Methods” section and the accompanying table) and surveys. Pedagogically oriented data collection methods can be connected to specific modules or they can be general, producing information about pupils that informs teachers’ practices for the school year. Importantly, we envisage a data-informed teaching practice rather than a form of formative assessment for pupils (or parents). This is because the tasks in the analysis sessions, although relevant, will not correspond directly to subsequent learning tasks and learning objectives.

Pragmatist questions might also generate questions such as: Are pupils experiencing crises? How can I help students to develop creative strategies? Again, thinking of the teacher as a kind of researcher/data collector, we would propose that these kinds of questions might work well as sensitizing questions (cf. sensitizing concepts), drawing the teacher’s attention to particular incidents in the classroom. Where during lessons, for example, are pupils expressing frustration? Where are they attempting to alter the terms of participation (by changing groups or equipment or rules, for instance)? And where are pupils simply attempting the same task in the same way? Identifying these incidents as critical to learning may help teachers to direct their finite energy in a timely and prudent manner.

Finally, a pragmatist pedagogical approach suggests that crises are an important aspect of learning situations and that crises are generally experienced as something negative. This claim raises the question of whether pedagogues should intentionally lead learners into crisis situations. PE literature traditionally underscores the importance of positive and/or joyful experiences, and in our view, these experiences are crucial. Our position, though, is that pedagogues should also lead learners into challenging, frustrating, and uncomfortable situations. This can, of course, be done with care and sensitivity, and teachers should be prepared to help pupils to act creatively. And successfully employing crisis-creativity pedagogies will depend on teachers being familiar with the habits of learners and knowing how to modify environments. But without working in crisis spaces, we see PE’s potential for helping to develop movement capability as limited.

Notes

1. Renshaw and Chow (2019) have also underscored the importance of intentionality, essentially the subjective goals of the learner, in moving. They draw on Kelso (1995, cited in Renshaw & Chow, 2019), stating that intentions could be viewed as the most important individual constraint. Their reasoning is tied to the notion of action–perception coupling, which suggests that individuals perceive possibilities for action in environments, and when they act, they see more possibilities for action.
2. These trial-and-error actions have similarities with “oscillation” identified by Nyberg et al. (2021).

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