

Learning Trajectories of High-Performance Teacher-Coaches in Japanese High Schools: A Mixed-Methods Study

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Abstract

Background: Understanding how effective coaching impacts athlete success is crucial to understanding how high-performance teacher-coaches manage their dual teaching and coaching roles and develop their professional skills throughout their careers.

Aim: This study examined the key learning sources contributing to the professional development of teacher-coaches in Japan.

Methods: This study adopted a mixed-methods approach involving eight male teacher-coaches with over 20 years of successful coaching experience. Participants completed a questionnaire rated on a 7-point Likert scale regarding the importance of various learning sources throughout their careers. Additionally, semi-structured interviews were conducted to gain an in-depth understanding of their learning experiences.

Results: Quantitative analysis showed that the learning sources changed across career phases: "Learning as a teacher" (20s), "On-the-job experience" (30s–50s), and "Reflection" (60s). The qualitative analysis revealed three main themes: Learning as a teacher (20s), On-the-job experience (30–50s) and Reflection (60s). These themes illustrated how the sources contributed to the development of their coaching skills—early teaching responsibilities nurtured intra- and interpersonal competencies, while later stages emphasized the cultivation of reflective practices.

Conclusions: The findings contribute valuable insights into improving coach development programs, ensuring teacher-coaches ongoing growth and success in their dual roles. Coach developers should encourage teacher-coaches to foster intra- and interpersonal knowledge through teaching and various other learning opportunities.

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INTRODUCTION

In youth sports, coaches play a vital role in the development of young people in and through sports, including in relation to performance and psycho-social growth (Côté et al., 2016; Mizushima et al. 2022). In contexts where the potential number of athletes is relatively small and / or reducing (e.g., declining birthrates in many developed countries) (Cheng et al., 2022), the role of the coach may be even more crucial in getting the best out of the limited and sometimes shrinking pool of athletes. However, the quality of coaching and the associated positive impact on the athlete experience cannot be assumed. As a result, there has been growing interest in the preparation of these important sports actors across the world (Rynne & Mallett, 2024). Previous research has investigated the routes of excellent coaches across a broad range of countries, revealing that they tend to develop through a variety of situations and experiences, including formal, non-formal, and informal learning opportunities (Mallett et al., 2009; Nelson et al., 2006; Rynne et al., 2017; Trudel & Gilbert, 2024). Understanding the quality of specific learning sources and how they contribute to the growth of coaches can be valuable in creating effective policies and programs for coach development. The

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subsequent implication is that better quality coaches will positively impact not only the athletic performance of their athletes but also contribute to the broader development of young athletes as confident and capable individuals.

Features and Development in Teacher-Coaches

A group that occupies a challenging and somewhat unique position within the global youth sports coaching landscape is teacher-coaches (Rog, 1984). Primarily employed as teachers within educational institutions, teacher-coaches also take on added responsibilities related to sport coaching work in the school system (sometimes with additional remuneration). Among those empirical studies examining teacher-coaches, most are focused on the opportunities and challenges in performing these dual roles (Johnson et al., 2023; Camiré, 2015). Reported benefits associated with teacher-coaches include stronger levels of rapport between coaches (i.e., teachers) and students (i.e., athletes) and improved career advancement prospects for the teacher-coaches (Johnson et al., 2023). However, there have been some major challenges noted, chief amongst them being the extreme demands placed on teacher-coaches time, as well as experiences of role conflict (Johnson et al., 2023; Camiré, 2015). What has received far less attention is how these teacher-coaches develop their craft in undertaking this challenging work.

An interesting aspect when considering the development of teacher-coaches is the role their pre-service teacher training plays. While it may be assumed that teacher-coaches have highly relevant tertiary training, this may not always be the case. For example, in a large-scale Canadian survey, only 40% of teacher-coaches were Physical Education (PE) qualified (Camiré et al., 2017). In a study of Japanese middle schools, the situation was even worse, with only 21% being PE teacher-coaches (Japan Sports Association, 2021). Even when trained in PE, research has suggested that teacher-coaches still behave differently in teaching as opposed to coaching contexts. It is reasonable to say that teacher-coaches, while somewhat distinct from other coaching peers, still have differential educational backgrounds in knowledge specific to coaching. For this reason, it is worthwhile further considering the sources of learning reported by teacher-coaches. Winchester et al. (2013) reported that Canadian teacher-coaches tended to prefer non-formal and informal learning situations, such as participating in coaching clinics and interacting with colleagues, rather than formal learning situations. Further emphasizing the perceived role of unmediated learning situations, Wilson et al. (2010) reported that high school team sports teacher-coaches in Canada acquired coaching skills through on-the-job experience and reflection. Given the seeming importance of social learning, we re-iterate the importance of context.

Furthermore, Camiré and Trudel (2014) demonstrated the positive impact of learning psychological skills on teacher-coaches, highlighting its effectiveness in enhancing interpersonal knowledge. Although valuable insights regarding teacher-coaches' sources of learning have emerged from studies in Canadian contexts, these may not be directly transferable. Therefore, it is essential to explore cultural differences specific to Japan, enabling more culturally nuanced strategies for better and in-depth understanding for teacher-coaches.

Studies for Effective Coaching and Learning Sources

Many researchers have investigated the features of effective or successful coaching (Becker, 2009; Cook et al., 2022; Côté & Gilbert, 2009; Lara-Bercial and Mallett, 2016). As Côté and Gilbert, (2009) proposed, coaches not only require sports-specific knowledge but also intra- and interpersonal knowledge for effective coaching. Indeed, coaches' praxis in enhancing athlete outcomes (performance and well-being) is shaped by what they know and what they need to know to become better at their craft. Successful coaches are agentic in embracing opportunities for learning to shape and reshape praxis (Lara-Bercial & Mallett, 2016; Mallett & Lara-Bercial, 2023). Several research studies on high-performance coaches in the Australian context have highlighted a variety of unmediated or unguided learning sources that coaches valued: (i) learning in and through coaching work, (ii) discussions with others, and (iii) experience as athletes (Mallett et al., 2016; Rynne & Mallett, 2014). In the Singaporean context, Mizushima et al. (2022) found that high-performance youth sports coaches learned from other professionals in their field as well as various athletic and coaching experiences.

Although the above-cited studies were conducted with either semi-structured interviews or questionnaires, some studies have investigated coaches' learning sources by combining such methods. A novel study by Mallett and colleagues (2016) examined coaches' learning across their careers using questionnaire and semi-structured interview approaches aimed at generating an in-depth understanding of coaches' professional growth. They found that coaches perceived on-the-job experience as the primary source of learning across their careers (early, mid, and late). However, they embraced more diverse learning sources as their coaching careers progressed. The learning of teacher-coaches, for example, may be uniquely shaped by the varied social factors related to education, as well as their more personal circumstances, such as the teaching responsibilities in their work as well as their family responsibilities. Following this potentially generative line of inquiry, we explore the specific challenges faced by teacher-coaches and the factors contributing to their growth.

The Context of Japanese Teacher-Coaches

Most youth sports activities in Japan, including athletics, are conducted as extracurricular activities, comprised of teams affiliated with the school headed by coaches who work as teachers at that school. This system bears some resemblance to Australia (Johnson et al., 2023), Canada (Camiré, 2015; Camiré et al., 2017), and the United States (Konukuman et al., 2010); however, it is significantly different from the club culture prevalent in Europe. A key difference to these other systems is that virtually all coaches in Japan are teacher-coaches. It is rare that coaches are engaged in a professional capacity (the exception in Japan is for distance running).

Student-athletes do not have to pay coaching fees, as the school system provides a salary to teacher-coaches for their teaching duties. Notably, there has traditionally been an expectation that teacher-coaches will engage in their coaching work without any additional financial remuneration. Moreover, successful coaching rarely contributes to promotions or other forms of career advancement. Despite the voluntary nature of coaching work in addition to their teaching responsibilities, teacher-coaches in Japan are still required to achieve two key outcomes through coaching: (i) successful performance (i.e., wins) and (ii) psycho-social development (e.g., character development). These outcomes are prioritized because high-achieving athletes can be awarded entrance and scholarships to leading Japanese universities, and coaches are considered key social agents contributing to students' personal character development and socialization skills.

Research Gap and Need for Contextualized Study

As previously mentioned, existing studies on teacher-coach professional development have primarily been conducted within the Canadian context, which limits their generalizability to culturally distinct environments like Japan. A Japanese national survey indicated that approximately 18% of teacher-coaches in high schools acknowledged deficits in their coaching competencies, such as sport-specific knowledge and practical coaching experience (Japan Sports Association, 2021). Notably, nearly 76% lacked formal coach certification from the Japan Sports Association, suggesting Japanese teacher-coaches might undervalue formal learning opportunities for developing coaching praxis. Or perhaps, due to the time-pressured nature of their dual roles, they are unlikely to engage in established programs of development. This highlights the need for culturally contextualized research to better understand and support the unique developmental needs of Japanese teacher-coaches.

Purpose of the Study and Research Questions

The purpose of this study was to examine the key learning sources contributing to the professional development of teacher-coaches. Specifically, the research questions of the current study were (1) What learning sources do high-performance teacher-coaches perceive as important, and how do these perceptions change throughout their careers? (2) How and why do teacher-coaches describe and make sense of these valued learning experiences in their career? By focusing on high-performance teacher-coaches in Japan, the findings of this study could be helpful for an in-depth understanding of how teacher-coaches develop coaching expertise in a dual role.

METHOD

Research Design

This study is grounded within a constructivist paradigm, which holds that reality is socially constructed and meaning is created through the interaction between individual experiences and the surrounding world (Poucher et al., 2020). A combined method of qualitative and quantitative research designs was adopted in this study to investigate teacher-coaches' learning sources. Qualitative data can be utilized to provide rich descriptions of phenomena, while quantitative research supports greater comparability and generalizability (Sparkes & Smith, 2013). Accordingly, the advantage of using a combined approach was that integrating different data generation techniques permitted a more complete picture of the Japanese context for teacher-coaches.

In this study, quantitative data were generated using a modified version of the questionnaire designed by Mallett et al. (2016). Participants were asked to rate various sources of learning using a seven-point Likert scale. Participants were asked to rate various sources of learning using a seven-point Likert scale. This scale was selected to provide a balanced range of response options, allowing for greater sensitivity and differentiation in participants' preferences compared to a five-point scale while avoiding the cognitive load that may arise with a ten-point scale (Mallett et al., 2016). Analysis of these data involved the calculation of basic descriptive statistics that helped to highlight common and teacher-coach-specific trends related to personal learning. Consistent with the constructivist approach, qualitative data from the semi-structured interviews were then generated to provide more nuanced insights into how the specific learning sources served to inform teacher-coaches craft. Reflexive thematic analysis (RTA) was employed to interpret qualitative data in-depth and create overarching themes in accordance with research purposes (Braun et al., 2016). This method accounts for the complexity of qualitative data by allowing for a flexible approach to analyzing qualitative data while still providing a rich and detailed account of data. In combination with the features identified in the questionnaire analysis, these narratives were then integrated using RTA to generate nuanced themes related to the different types of learning sources discussed. Further details about the analysis process are included in the "Data Analysis" section below.

Researcher's Position

In keeping with the foundations of RTA and the constructivist paradigm more broadly, it is important to acknowledge the researchers' roles and positionality. The lead author was previously engaged as a teacher-coach for athletics (two years at middle school and five years at university). This contributed to his foundational understanding of teacher-coaches. Furthermore, through recruiting high school student-athletes, he built many connections with high school teacher-coaches in athletics. Those experiences enabled the primary researcher to further appreciate the work of these coaches and how they learn. While there are benefits to immersing oneself within the context, it is necessary to be mindful of potential biases in data collection and analysis. The lead author had no conflicts of interest with the participants, thereby minimizing potential issues. However, efforts were made to encourage participants to share their thoughts and experiences openly.

Participants

Eight athletics (track and field) high-school teacher-coaches (Mean Age: 64.8 ± 9.3 years, Mean coaching career: 41.0 ± 10.9 years, all participants were male) voluntarily participated in this study. All participants had specific prior experiences as an athlete (sprint: 2, jump: 2, throw: 2, distance: 2). The two criteria used in participant recruitment were (i) a career spanning more than twenty years as a teacher-coach, and (ii) Coached at least three athletes who won at national level competitions in high school or more than one athlete who set a new national high school record. The criteria above were determined in accordance with Rynne and Mallett (2012), who explored the work and learning of high-performance coaches. Regarding the first criterion, their study involved conducting semi-structured interviews with high-performance coaches who had extensive experience. The shared intention in their and our studies was to involve coaches who had considerable breadth and depth of experience to reflect upon. For the second criterion, the participants in their study had experience coaching athletes for international representation. Although we did not mirror this exact criterion in the current study, we considered that coaching athletes who have won national-level competitions or have set a new national high school record is a comparable level of coaching achievement. Written

informed consent was obtained, ensuring they understood that their participation in the study was entirely voluntary and that they could withdraw at any point without any negative consequences. According to the institutional guidelines, this study did not require formal ethical clearance as it involved interviews with adult participants on non-sensitive topics. However, informed consent was obtained from all participants, and ethical principles of voluntary participation, anonymity, and confidentiality were strictly followed.

Procedure

Participants were contacted initially via telephone, e-mail, or social network service, and an overview of the research project was provided. The lead author's professional network was used to recruit potential participants in this study. It was verified that each participant met the abovementioned criteria during the initial contact by briefly asking about their coaching careers. After coordinating a convenient place and time, a face-to-face questionnaire was conducted in three phases. First, demographic data, including age, coaching career, specific coaching event, performance as an athlete, and performance of coached athletes, were collected so as to develop some initial sense of personal history and context. Second, participants were asked to rate each of the learning sources (1-10), as reported by Mallett and colleagues (2016), throughout their coaching career with the aim of stimulating coach reflections on their learning journeys. Third, participants engaged in a semi-structured interview that lasted between 37 to 93 minutes (Mean time = 58 minutes) to generate further specific data related to valued learning sources.

Data Collection

The questionnaire was developed by adapting one created by Mallett et al. (2016) for Australian professional (paid) coaches, which was composed of 14 questions related to possible learning sources of coaches' development. An additional item was included to reflect the context of teacher-coaches in Japan (i.e., "Learning as a teacher"). Although Mallett et al. (2016) surveyed the contribution of each learning source in the early, middle, and late phases of their careers, respectively, participants in this study were asked to rate these sources of learning for each decade of their careers to nuance their journeys. A seven-point Likert scale (0: not used, 3: valuable, 7: extremely valuable) was adopted to quantify the coaches' perceptions of valued learning sources. A semi-structured interview was conducted to collect qualitative data. Participants were asked to answer open-ended questions related to their development in each decade across their coaching journey. Specifically, we asked participant teacher-coaches for their perceptions of the two highest-rated learning sources that contributed to their growth as a coach in each decade. The pre-interview guide for each question was composed of two main questions: (1) Why did you rate this source as relatively higher than the others? and (2) How did you specifically learn from these sources? Further prompts were used throughout (e.g., Can you share an example?). The semi-structured interviews were audiotaped and transcribed verbatim. Transcriptions were sent to each participant for member checking, and no amendments to the transcriptions were communicated.

Data Analysis

To begin with, the quantitative questionnaire ratings from each participant were averaged with Microsoft Excel for each question and decided. Additionally, within each decade, the questions were ranked in order of their scores. Mean scores for each learning source in each decade were calculated and interpreted using the following criterion: extremely valuable (5.5 or above), valuable (4.0-5.4), some value (2.5-3.9) and limited value (2.5 or less), consistent with Mallett et al. (2016). This allowed the researchers to gain an initial sense of the shared and contrasting elements in the self-described learning journeys of the teacher-coaches. More than the typical 'volume' focused quantitative details generated in coaching research, this format allowed a better initial appreciation of the 'quality' of learning sources. Interview transcripts were analyzed using an RTA, which is an interactive approach to explore higher-order themes. We adopted Braun et al.'s (2016) six-step approach to RTA to promote rigour in the analytical procedure. During the process of analysis, the lead author read transcripts repeatedly to familiarize with the data set and relevant data were coded and labelled. In the next stage of the analytical process, higher-order themes were created in line with the aims of the research. The first two authors discussed these codes and themes. The third

author, who was familiar with the context of teacher-coaches in Japan, acted as a critical friend. Furthermore, reviewing and naming the themes were also conducted carefully through discussions with the second and last authors. After developing the themes, the analyses were sent to the participant teacher-coaches as another layer of sense-making to affirm and challenge the authors' codes and themes.

RESULTS AND DISCUSSION

Results

Qualitative Data Obtained by Questionnaire

Table 1 presents the descriptive analysis and ranking of mean scores for perceived valued learning sources by decade based on the quantitative data. Figure 1 visualizes the comparison of these mean scores across decades. Quantitative data from the questionnaire found three different learning sources, which were (i) "Learning as a teacher" (in 'the 20s), (ii) "On-the-job experience" (in the '30s, '40s and 50's), and (iii) "Reflection" (in '60s) were ranked as the highest rated learning sources, which addressed the first research question.

Table 1. The Ranking of Means for Perceived Valued Learning Sources

In the Twenties			In Thirties			In the Forties		
Rank	Content	Point	Rank	Content	Point	Rank	Content	Point
1	Learning as a teacher	4.6	1	On-the-job experience	6.6	1	On-the-job experience	6.6
2	Professional reading	4.4	2	Learning as a teacher	5.8	2	Reflection	6.3
3	On-the-job experience	4.0	3	Reflection	5.4	3	Learning as a teacher	5.3
4	Working with others	3.6	4	Consultant	5.0	4	Discussion with others	5.0
5	Observing an athlete	3.5	5	Discussion with others	4.5	5	Consultant	4.6
6	Experience with others	3.3	6	Working with others	4.5	6	Professional reading	4.1
7	Family and friends	3.3	7	Professional reading	4.5	7	Working with others	3.9
8	Reflection	3.0	8	Observing an athlete	3.8	8	Observing an athlete	3.8
9	Discussion with others	3.0	9	Family and friends	3.4	9	Family and friends	3.0
10	Tertiary study	3.0	10	Experience with others	3.0	10	Tertiary study	2.9
11	Consultant	2.3	11	Tertiary study	2.6	11	Watching TV and YouTube	2.6
12	Watching TV and YouTube	2.0	12	Watching TV & YouTube	2.5	12	Professional development	2.3
13	Professional development	1.9	13	Professional development	2.3	13	Experience with others	1.4
14	In-house program	1.0	14	In-house program	1.3	14	In-house program	1.3
15	Previous occupation	0.9	15	Previous occupation	0.6	15	Previous occupation	0.5

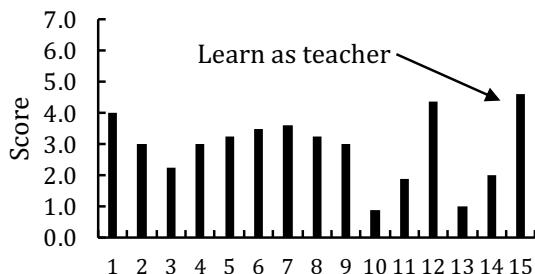
In the Fifties			In the Sixties		
Rank	Content	Point	Rank	Content	Point
1	On-the-job experience	4.9	1	Reflection	5.8
2	Reflection	4.4	2	Discussion with others	5.4
3	Discussion with others	4.1	3	On-the-job experience	5.2
4	Working with others	3.6	4	Observing an athlete	4.4
5	Observing an athlete	3.4	5	Professional reading	4.4
6	Family and friends	3.4	6	Working with others	3.6
7	Learning as a teacher	3.4	7	Learning as a teacher	3.2
8	Consultant	3.3	8	Consultant	3.0
9	Professional reading	3.3	9	Watching TV and YouTube	2.8
10	Watching TV and YouTube	2.6	10	Family and friends	2.6
11	Tertiary study	1.9	11	Tertiary study	2.0
12	Experience with others	1.0	12	Professional development	1.4
13	Professional development	0.7	13	Experience with others	0.4
14	Previous occupation	0.4	14	In-house program	0.2
15	In-house program	0.4	15	Previous occupation	0.0

Table 2. The Summary of Three Main Themes with Representative Quotes

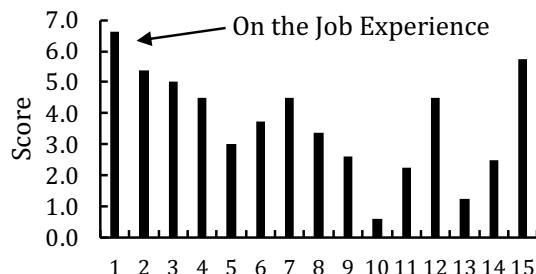
Theme	Summary of Findings	Representative Quote
1	Becoming a high school teacher-coach	Learning through student guidance, teaching skills, and teaching philosophy It was important to listen to troubled students who needed guidance. More than instructing them, it was crucial to listen and ask, [...]
2	Teacher-coach agency in and through work	Learning through coaching multi-event and varied athlete levels To win the inter-school competition, you must compete in all events. It's impossible to win the

Theme		Summary of Findings	Representative Quote
			overall championship by just focusing on sprinting. [...]
3	Influences and learning from others	Learning through observation, discussion, and access to expert advice	We often talked about things like, 'This is how we provide instruction at the middle school level [...]

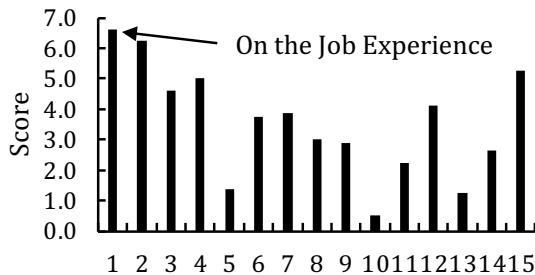
Scores in 20's



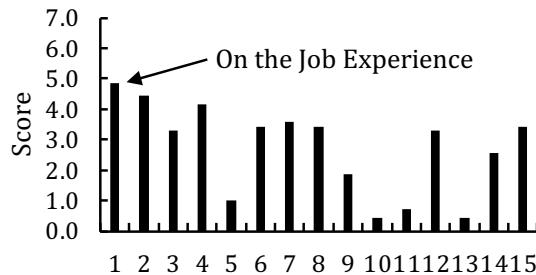
Scores in 30's



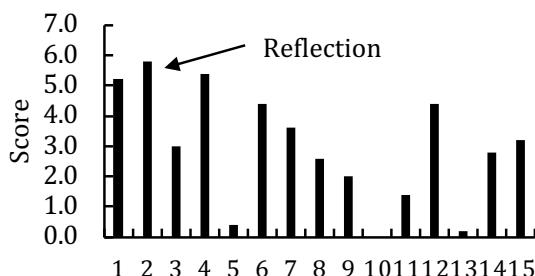
Scores in 40's



Scores in 50's



Scores in 60's



No	Question	No	Question
1	On the Job Experience	9	Tertiary Study
2	Reflection	10	Previous Occupations
3	Consultant	11	Professional Development
4	Discussion with Others	12	Professional Reading
5	Experience as an Athlete	13	In-house Programs
6	Observing Others	14	Watching TV and YouTube
7	Working with Others	15	Learn as a Teacher
8	Family and Friends		

Figure 1. Scores by Age Group and List of Questions"

*: Top-rated items in each decade are highlighted within the figure

Qualitative Data Obtained by Self-structured Interview

Thematic analysis revealed three overarching themes ("Becoming a high school teacher-coach," "Teacher-coach agency in and through work," and "Influences and learning from others," as shown in Table 2) that responded to the second research question. Furthermore, sub-themes and representative quotes for each main theme are presented in Tables 3 to 5.

Discussion

Changes in Valued Learning Sources Across Career Stages: A Quantitative Analysis

The quantitative data obtained from the questionnaire was helpful in understanding the overview of learning sources for teacher-coaches and provided a good starting point for connecting with the qualitative data. A key feature is that teacher-coaches primarily leveraged their teaching experiences during an early stage in their careers. Compared to previous studies that explored learning sources for sports coaches (Mallett et al., 2016), "learning as a teacher" was identified as a

unique learning source. This result suggests that certain skills were transferred from teaching to coaching through engaging with teaching responsibilities. The teacher-coaches also rated "on-the-job experience" and "reflection" very highly throughout their entire careers. This finding was in line with findings in the Canadian context (Wilson et al., 2010) where similar unmediated learning sources were also found to be valued by them. Again, more specific details and insights will be offered in relation to the qualitative outcomes. The suggestion here is that teacher-coaches gain insights through social interactions that become more influential as their careers progress. Interestingly, tertiary study was consistently rated low throughout the coaches' careers. This might be due to the Japanese tertiary education system and the lack of relevance to coaching. As Johnson et al. (2023) mentioned, university education primarily provides pedagogy for becoming a teacher, especially for PE teachers, rather than sports science for becoming a coach. This gap could be a potential reason why teacher-coaches in this study did not perceive tertiary study as valuable.

Valued Learning Sources in Early Career: Becoming a High School Teacher-coach

Our first finding was that "Becoming a high school teacher-coach" involved inescapable tensions, meaning that their dual roles as teachers and coaches both contributed to their development but also disrupted their coaching progression (Table 3). Participants reported that engaging with students in the teaching role enabled them to develop interpersonal skills, including getting to know young people by listening to their challenges. At the same time, it was also found that assuming major school responsibilities, such as administrator or student guidance roles, could hinder their growth as coaches. This finding can be interpreted through the lens of role identity theory, where the internal conflict between competing roles can shape or constrain professional growth depending on which identity is prioritized.

Table 3. Key Components and Quotes for Becoming a High School Teacher-Coach

Main theme: Becoming a high school teacher-coach		
Sub-theme	Integral component(s)	Representative quote(s)
(a) Transfer of teaching experience to coaching	(a1) Learning through student guidance	It was important to listen to troubled students who needed guidance. More than instructing them, it was crucial to listen to them and ask, "What do you think about this?" That approach was crucial.
	(a2) Improvement of teaching skills as a teacher	Indeed, it is important to consider how to teach in a way that students can understand. Instructional manuals exist, but they cannot be directly applied to students. Writing lesson plans for a lecture has taught me how to instruct sincere students who have known nothing.
	(a3) Establishing teaching policy	Letting students experience that "if they try, they can do it." Indeed, once you inspire their thinking and motivation, children hold untapped potential.
(b) Disturb coaching career by teaching duties		When I became the director of student guidance, there were many troubled students. I had to leave an athletic competition halfway through. While athletes on my team were running in the final, I was at a family court attending trials. I needed to observe more and provide advice as a coach. Because of this situation, the team's condition was getting worse dramatically. Absolutely, I had no time at all to coach athletes.

While this study shows how engaging in teaching contributes to coach development in teacher-coaches, Australian and Canadian teacher-coaches reported that their coaching led to better academic and social outcomes associated with their teaching (Camiré, 2015; Johnson et al., 2023).

This contrast in the direction of skills transfer between teaching and coaching might be attributed to a preference for either teaching or coaching. Japanese high school teacher-coaches in this study reported a preference for coaching over teaching, whereas teacher-coaches in both Canadian and Australian empirical studies expressed a preference for teaching over coaching (Camiré, 2015; Johnson et al., 2023). In this study, we specifically focused on teacher-coaches who had achieved exceptional results in sports coaching. While this study focused on coach development and thus revealed cases where teaching responsibilities contributed to coaching progression, it is possible that in different contexts—or with a stronger preference for teaching—the direction of skill transfer might be reversed, with coaching experiences enriching one's teaching practice. This cultural difference in professional orientation highlights the importance of sociocultural theory in understanding how institutional values and expectations influence learning and identity formation in teacher-coaches across contexts.

Specifically, engaging in a teacher's duties provides an opportunity to establish adaptive intra- and interpersonal skills as a coach. Becker (2009) found five characteristics of good coaches, highlighting the importance of being a good listener to foster effective coach-athlete communication and subsequently fostering close relationships with athletes, matching with participants' narrative in this study (See 3-a1). The skill transfer from teaching to coaching can be explained through Role Socialization Theory (RST; Richard, 2015). Based on RST, individuals' behaviours, attitudes, and expectations are shaped by the roles they occupy within a social structure. Becoming a teacher-coach involves adopting the role of a teacher first. The Japanese Ministry of Education defines teachers' responsibilities as supporting students in their autonomous and self-directed growth and development (Ministry of Education, 2022). Consequently, teacher coaches accept these societal expectations and strive to meet them, particularly during the early phases of their careers. By adapting to these expectations, they cultivate interpersonal knowledge essential for coaching, such as communication skills, which contribute to their development as coaches.

While there was clearly identified value for coaching work derived from teaching work, it was also found that performing the teaching role can disrupt coach development. Some teacher-coaches are required to take on important positions within a school, such as Principal, Assistant Principal, and Director roles (e.g., student guidance). Teacher-coaches who engage in such higher duties are required to re-calibrate their focus from coaching to teaching work. In Japan, the schools typically prioritize administrative duties over coaching, making it difficult for teacher-coaches to allocate sufficient time for their coaching. Indeed, five of eight study participants were engaged in higher teaching positions and argued that their coaching activities were significantly curtailed by their administrative duties (see Table 3-b).

Valued Learning Sources in Mid to Late Career: Teacher-coach Agency in and Through Work

Our second main finding was that teacher-coaches develop through "Teacher-coach agency in and through work" (Table 4). "On-the-job experience" was rated highest in value in the participants' the thirties (6.6), forties (6.6) and fifties (4.9), as well as "Reflection" in the sixties (5.8), as shown in Table 1. Mallett et al. (2016) reported similar findings. The identified value of unmediated learning and reflection in and through coaching work is also consistent with a study on Canadian team sports teacher-coaches (Wilson et al., 2010). Our findings, in conjunction with previous studies, indicate that unmediated learning and reflection are valued learning methods for a broad population of coaches, including these Japanese teacher-coaches. These findings can be interpreted through experiential learning theory, which emphasizes learning through doing and reflecting. To the best of our knowledge, this study is the first to detail how teacher-coaches develop their coaching skills through these learning processes.

In this study, unmediated learning of teacher-coaches might be represented through diverse coaching experiences, such as coaching multi-competitive level athletes and multiple events in athletics. Those underlying factors of unmediated learning can be further discussed through RST. In the context of teacher-coaches, the role of coaching diverse competitive athletes and multiple events in athletics requires continuous adaptation and learning as a coach. In other words, a broader range of experiences will likely enhance their coaching ability to meet the expectations and effectively perform their coaching role. The requirement to coach athletes with different skill levels and different events likely necessitates the development of a repertoire of coaching techniques, from

fundamental skills to advanced training methods and underpinning knowledge and competencies (see Table 4-a1 and a2). It is noteworthy that in Japanese high schools, coaches must coach all interested students in their club regardless of competitive ability. These diverse student-athletes provided varied learning opportunities for these participating Japanese teacher-coaches. Indeed, six of the eight participants reported they coached different events to those they competed in as athletes. Our results supported Gilbert et al. (2009) with a preference for coaching multi-events to promote learning and growth. A key reason for the necessity to coach various events is due to the structure of the inter-school competition system (see Table 4-a1). Winning the inter-school competition is a great honour for coaches. Therefore, many of them proactively engage in coaching multiple events rather than specializing in a single event.

Table 4. Key Components and Quotes for Teacher-Coach Agency in and Through Work

Main theme: Teacher-coach agency in and through work		
Sub-theme	Integral component(s)	Integral component(s)
(a) Diverse coaching experience	(a1) Coaching multi-events	To win the inter-school competition, you must compete in all events. It's impossible to win the overall championship by just focusing on sprinting. You need to earn points for throwing events, long jumps, and long-distance running. Ultimately, you need to score points in the pole vault. To achieve overall victory, you must evenly distribute your efforts across all available events.
	(a2) Learning through changes in coaching targets	Indeed, when coaching athletes at lower competitive levels, it is essential to emphasize the basic skills of athletics. We had to start from a very basic approach. I engaged in very in-depth fundamental practice instead of focusing on advanced training for highly competitive-level athletes.
	(a3) Learning through personalized coaching	I don't fixate on one approach when coaching athletes. To put it positively, even if athletes A and B have similar body composition, their times are different, so I respect each athlete's individuality.
(b) Practice and Trial & Error	(b1) Trial and error in coaching	When the season started in April, I noticed that performance tended to decline by the time of the national competition in the summer. So, I decided to delay the season start intentionally to peak the performance later. [...] Because of this experience, I now ensure that everything is prepared by the end of March to start the season.
	(b2) Encounter with talented athletes	Indeed, when talented athletes joined the team, I learned how to coach them effectively to improve their performance. Meeting talented athletes requires a lot of trial and error.
(c) Personal Practical Experience	(c1) Personal experience as an athlete	Running together with athletes was very beneficial. When we went running outside, letting them run far ahead without supervision wasn't ideal, so running alongside them was very good. It was also a great positive influence on me.

Valued Learning Sources Across Career Stages: Influences and learning from others

Our third finding was the value of learning from others. Specifically, two sub-themes, "Learning through a mentor" and "Learning from other coaches," were reported to contribute to coaches' growth and development. A unique aspect of learning from others in the Japanese context is the relative ease of access to other coaches across different levels within both school settings. Most Japanese high schools have athletic teams, and teacher coaches are required to engage with these teams. Unlike in some Western countries, Japanese teacher-coaches frequently engage in shared

activities such as joint practices, tournaments, and inter-school networks, providing informal yet consistent opportunities for peer learning and mentorship.

While the influence of mentor coaches has also been emphasized in other contexts, such as in Singapore (Mizushima et al., 2022), the Japanese context may differ in both the structure and function of mentoring. In our study, mentorship was often informal and embedded within school-based communities rather than formalized developmental programs like Singapore. This reflects a culturally rooted norm in Japanese educational settings, where peer learning and senpai-kohai (senior-junior) relationships provide natural opportunities for professional growth. These findings suggest that, in the Japanese context, learning is more socially embedded and relational, indicating that mentoring functions less as a structured developmental tool and more as a continuous cultural practice of embedded learning. Indeed, all participants reported learning through social interactions with mentors and/or other teacher-coaches. Particularly, as they achieved success in their coaching careers, they gained access to higher-level coaches, such as becoming a member of a national representative team staff (Table 5). This shift in social relationships during career development aligns with the findings of Mallett et al. (2016) (see Table 5-b2).

Table 5. Key Components and Quotes for Influences and Learning from Others

Main theme: Influences and Learning from Others		
Sub-theme	Integral component(s)	Integral component(s)
(a) Learning through a mentor	(a1) Comprehensive learning as a coach	At that time, a mentor was in the same area, and he was active on a national level. I wanted to get closer to his level, even just a little. After competitions, while eating with other coaches, I would talk about how I wanted to somehow beat him.
	(a2) Specialized coaching methods	I learned about the run-up from Mr. Tom Tellez. He taught me to practice to avoid fouling and to adapt to various conditions, such as headwinds and tailwinds. I clearly remember him saying that.
	(a3) Learn about coach behaviour	There wasn't much coaching in the form of "Sprint like this." Instead, we had training programs designed to naturally modify athletes' sprint skills.
(b) Learning from the other coach	(b1) Learning through observation and discussion	I frequently exchanged information and had discussions with middle school teachers. ... We often talked about things like, "This is how we provide instruction at the middle school level," and I listened to various perspectives.
	(b2) Access to high-level coaches	When I went to training camps or on trips with the Japanese national team, the coaches were very conversational. I learned a lot by discussing things like sprinting techniques.
	(b3) Community and expert advice	We had a chance to win the relay, but due to mistakes and injuries... a Coach advised, "You need to strengthen the back and hamstrings, not just focus on abs."
(c) Learning through seminar	(c1) Specialized coaching methods and knowledge	Rather than what track and field is about, it was more about strengthening the club activities. To build strength quickly, you need supplementary exercises, and using barbells is effective.
	(c2) Confidence in own coaching	The training really helped confirm my coaching methods and my beliefs. German track and field, not just East Germany, still sets the standard for me even now. It's incredible.

Limitation and Further Research

This study has several limitations that should be acknowledged. First, the sample size was relatively small, which may limit the generalizability of the findings. Additionally, it should be noted that the participants in this study were exclusively specialized in athletics. Because this study focused on learning sources among high-performance athletics teacher-coaches, the number of potential participants who met the recruitment criteria was limited. Therefore, future research should explore a wider range of sports contexts to identify both commonalities and differences in the learning sources of high-performing teacher-coaches. Second, this study may include a gender bias, as all participants were male teacher-coaches. While this reflects the demographic reality of high-performance athletics coaching in many Japanese high schools, the absence of female perspectives limits the generalizability of the findings. Future research should investigate whether and how gender influences the professional development experiences and learning sources of teacher-coaches. Third, this study did not differentiate between PE and non-P.E. teachers. PE teachers are typically required to study sports science and pedagogy as part of their curriculum, which could form a foundation for developing their coaching skills. Based on this assumption, educational programs for teacher-coaches may need to be tailored differently for PE and non-P.E. teachers. Consequently, examining the differences in learning sources between these two groups is the research topic for future research to design more effective educational programs for teacher-coaches. Third, participants may not always accurately recall or interpret their learning experiences, especially those from their early careers. While efforts were made to improve accuracy by clearly outlining the research objectives and encouraging participants to reflect on their learning sources in preparation for the interview, potential bias may still exist in the data collected through both the questionnaire and semi-structured interviews.

Practical implications

The findings of this study have practical implications for policy and practice in the development of teacher-coaches. The findings of this study have practical implications for policy and practice in the development of teacher-coaches. First, coach developers working with teacher-coaches should be encouraged to help them understand that they develop intra- and inter-personal skills through actively engaging in teaching early in their careers. Although managing dual roles may create time pressures and make it challenging to focus on coaching, coach developers should emphasize that teaching experience can significantly contribute to their long-term growth as coaches. Second, as their careers progress, it becomes increasingly difficult for teacher-coaches to engage in both teaching and coaching (or sometimes coaching and administrative duties) with equal effort. Therefore, it is essential to establish clear priorities between these roles. Doing so can improve a coach's well-being and enhance effectiveness, leading to better athlete outcomes, educational results, and overall school functioning. Thirdly, providing a diverse coaching environment is crucial for enhancing their learning. For example, to participate in under-18 and under-16 athletic championships in Japan, athletes must meet qualifying standards for their main event as well as relatively lower qualifying standards for their sub-events. To achieve these standards in multiple events, coaches are required to develop their knowledge and competencies via a variety types of learning sources.

Furthermore, to support such diverse coaching requirements, coaching workshops and online communities are encouraged to support teacher-coach learning by facilitating knowledge exchange and contributing to their professional growth. Finally, further investigation of teacher-coaches within different contexts is deemed important, as Camiré (2015) asserted. A better understanding of their unique challenges in specific contexts might lead to more effective coach development programs, ensuring their ongoing development and success.

CONCLUSION

This study examined how high-performance athletics teacher-coaches in Japan develop through shifting learning sources. Early career stages emphasized learning through teaching, while later phases prioritized on-the-job experience and reflection. Diverse coaching tasks and social interactions supported the development of interpersonal and adaptive coaching skills. However, administrative duties often limited coaching engagement. The study contributes to coaching

literature by illustrating how experiential learning and role expectations interact in the teacher-coach context. This study provides theoretical insight into coach developers and offers practical recommendations for coach education programs in school-based contexts. Specifically, fostering interpersonal skills through teaching duties and multi-environment, while schools should reduce administrative loads to support coaching roles. Future research should explore how different cultural and institutional contexts influence teacher-coach learning using cross-national and longitudinal approaches.

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AUTHOR CONTRIBUTION STATEMENT

SK contributed to manuscript writing and conceptual design. JM was involved in data analysis and writing. CM and SR contributed to data interpretation and manuscript writing.

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