

BASKETBALL COACHES' USE OF TEACHING METHODS, AFFINITY TO  
TECHNOLOGY INTERACTION, AND TECHNOLOGY INTEGRATION SELF-  
EFFICACY IN MOROCCO

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**BASKETBALL COACHES' USE OF TEACHING METHODS, AFFINITY  
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SELF-EFFICACY IN MOROCCO**

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## ABSTRACT

### BASKETBALL COACHES' USE OF TEACHING METHODS, AFFINITY TO TECHNOLOGY INTERACTION, AND TECHNOLOGY INTEGRATION SELF-EFFICACY IN MOROCCO

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This study aims to investigate basketball coaches' self-reported use and value of teaching methods, affinity to technology, and technology integration self-efficacy by age, educational level (lycée, undergraduate, graduate), and coaching certification categories (Mini Basket vs. Level 1-2-3 Coaching Certificates) in Moroccan context. To this end, a digital survey including scales related to teaching methods, Affinity to Technology Interaction (ATI), and Technology Integration Self-Efficacy (TISE) was sent to 884 basketball coaches. A total of 153 coaches (24 women and 129 men) completed the survey. The self-reported use and value of teaching methods data was analyzed by MANOVA, and the ATI and TISE data were analyzed by ANOVA ( $p < 0.05$ ). Findings indicated that the value given to productive athlete-initiated teaching methods with 18-24 and 25-34 years old coaches was higher than coaches with 55-65 years old ( $p < 0.05$ ). There were no significant differences among the coaches with respect to the use of teaching methods by coaches' ages ( $p > 0.05$ ). Descriptive data indicated that coaches use productive athlete-initiated teaching methods less than reproductive and productive problem-solving methods. According to the ATI findings, 18-24 years old coaches compared to 55-65 years old coaches and coaches with undergraduate and graduate degrees as compared to lycée degree

had a higher affinity to technology ( $p<0.05$ ). Moreover, compared to lycée degree, coaches with undergraduate and graduate degrees had higher technology integration self-efficacy ( $p<0.05$ ). These findings indicated that coaches need continuing professional development programs for autonomy supportive athlete-centered teaching methods regardless of age. Affinity of technology and technology integration self-efficacy professional development programs should specifically target older coaches and coaches with lower educational levels/background.

**Keywords:** Basketball Coaching, Teaching Methods, Affinity to Technology Interaction, Technology Integration Self-Efficacy



## ÖZ

### FAS'TA BASKETBOL ANTRENÖRLERİNİN ÖĞRETİM YÖNTEMLERİ KULLANIMLARI, TEKNOLOJİ ETKİLEŞİMİNE YAKINLIKLARI VE TEKNOLOJİ ENTEGRASYONU ÖZ YETERLİLİKLERİ

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Bu çalışmanın amacı, Fas basketbol bağlamındaki antrenörlerin yaş, eğitim düzeyi (lise, lisans, lisansüstü) ve antrenörlük sertifikası kategorilerine (Mini Basket ve 1-2-3. Kademe Antrenörlük Sertifikaları) göre öğretim yöntemleri kullanımlarını ve bunlara verdikleri değeri, teknolojiye yakınlıklarını ve teknoloji entegrasyonu öz yeterliliklerini incelemektir. Bu amaçla, 884 basketbol antrenörüne öğretim yöntemleri, Teknoloji Etkileşimine Yakınlık (ATI) ve Teknoloji Entegrasyonu Öz Yeterliliği (TISE) ile ilgili ölçekleri içeren dijital bir anket gönderilmiştir. 884 antrenörden 153'ü (Kadın: 24; Erkek: 129) anketi tamamlamıştır. Öğretim yöntemlerinin algılanan kullanımı ve değeri verileri MANOVA ile, ATI ve TISE verileri ise ANOVA ile analiz edilmiştir ( $p<0.05$ ). Bulgular, 18-24 ve 25-34 yaş aralığındaki antrenörlerin üretken sporcu-başlangıçlı öğretim yöntemlerine verdikleri değerin 55-65 yaş aralığındaki antrenörlerden daha yüksek olduğunu göstermiştir ( $p<0.05$ ). Yaşlarına göre öğretim yöntemlerinin kullanımı açısından antrenörler arasında anlamlı bir fark saptanmamıştır ( $p>0.05$ ). Tanımlayıcı veriler, antrenörlerin sporcu merkezli öğretim yöntemlerini antrenör merkezli öğretim yöntemlerine göre daha az kullandıklarını göstermiştir. ATI bulgularına göre, 18-24 yaş arası

antrenörler 55-65 yaş arası antrenörlere kıyasla, lisans ve yüksek lisans mezunu antrenörler lise mezunu antrenörlere kıyasla teknolojiye daha yakındır ( $p<0.05$ ). Ayrıca, lise mezunu antrenörlere kıyasla, lisans ve lisansüstü mezunu antrenörlerin teknoloji entegrasyonu öz yeterlilikleri daha yüksektir ( $p<0.05$ ). Bu bulgular, antrenörlerin yaşları ne olursa olsun özerklik destekleyen sporcu merkezli öğretim yöntemleri için sürekli mesleki gelişim programlarına ihtiyaç duyduklarını göstermektedir. Teknolojiye yakınlık ve teknoloji entegrasyonu öz yeterliliği mesleki gelişim programları ise özellikle ileri yaştaki ve düşük eğitim seviyesine sahip antrenörleri hedeflemelidir.

**Anahtar Kelimeler:** Basketbol Antrenörlüğü, Öğretim Yöntemleri, Teknoloji Etkileşimine Yakınlık, Teknoloji Entegrasyonu Öz Yeterliliği



*To my parents,  
Zakariae & Sara Azzouzi,  
Mema Khadija, and the memory of Lala Halima,  
with all my love*

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## LIST OF ABBREVIATIONS

|       |                                                                                       |
|-------|---------------------------------------------------------------------------------------|
| ATI   | : Affinity to Technology Interaction                                                  |
| TISE  | : Technology Integration Self-Efficacy                                                |
| FRMBB | : Fédération Royal Marocaine de Basketball (The Moroccan Royal Basketball Federation) |



## **CHAPTER 1**

### **INTRODUCTION**

Morocco is a nation that has a long history of basketball. Here, I place a focus on coaching while highlighting the growing value of athlete-centered training and coaches' technological capabilities. I emphasize how pedagogical abilities impact athlete development and how technology, including wearables and video analysis, may enhance coaching. The study aims to bridge knowledge gaps and promote coaching practices and player development through technology adoption by investigating coaches' technology preferences, integration self-efficacy, and athlete-centered teaching techniques in Moroccan basketball. The introduction gives a general review of Morocco's basketball history, culture, and coaching environment. It prepares the ground for a thorough investigation of how coaches use technology and teach with an athlete-centered approach, highlighting their contributions to athlete development and overall coaching efficacy.

In the words of former United Nations Secretary-General, Kofi Annan, sport has genuinely become an international language, bringing people together regardless of origin, background, religious convictions, or economic position (Fuss et al., 2008). With a long and illustrious history, basketball is one of the most popular sports in Morocco. Early in the 20th century, the sport was brought to Morocco, where it has since gained popularity and attracted a sizable number of players and trainers. As more young people take up basketball as a method to be active and healthy, basketball has grown in importance in Moroccan culture throughout time. With several international competitions and events hosted in Morocco, the sport has also significantly contributed to social integration and cultural exchange. Despite basketball's popularity in Morocco, little is known about how the discipline's coaches there employ athlete-centered instruction and technology. In the coaching

world, there is an increasing emphasis on coaches' pedagogical abilities and their role in athlete development. Coaching effectiveness is defined by the characteristics of coaching context (Côté & Gilbert, 2009). Current research emphasizes the importance of educational knowledge for coaches to advance in their professions. According to the researchers, coaches must have a thorough grasp of the teaching and learning processes and the capacity to effectively communicate and connect with athletes. Jones & Kingston (2013) found that coaches' professional content and pedagogical content knowledge or understanding of the subject matter and how to successfully teach it to athletes, is critical. Coaches with a deep understanding of pedagogical material are better able to plan training sessions, deliver instructions, and provide feedback that encourages learning and skill acquisition. Furthermore, academics like Goffena & Horn, (2021) stress the importance of coach-athlete relationships and the application of athlete-centered pedagogies. Athlete-centered pedagogies focus on athletes' and allow them to be active participants in their own growth. This technique promotes autonomy, decision-making abilities, and intrinsic motivation in athletes, resulting in improved performance and long-term participation in sports.

Athlete-centered coaching is a coaching technique that puts the individual athlete at the center of the coaching process, considering their particular traits, needs, and goals (Thibault & Babiak, 2005). Individualization, motivation, holistic growth, and long-term athlete development are all prioritized in this approach. Understanding athlete-centeredness from a pedagogical standpoint entail recognizing the relevance of learner-centered education and using various teaching approaches customized to athletes' learning requirements/needs and strategies. Coaches must be well-versed in various teaching approaches and their theoretical basis to apply them correctly to athletes' unique needs (Kılıç & Ince, 2023). Kılıç and Ince (2023) underlines the need for coaches to expand their instructional abilities and pedagogical expertise, especially in problem-solving and athlete-initiated teaching approaches. Athletes' preference for athlete-initiated approaches underscores the need for an athlete-centered approach in coaching, in which athletes have greater active engagement and control over their learning process (Kılıç & Ince, 2023). This approach entails active engagement, tailored methods, empowerment and autonomy, relationship

development, and reflective practice from a pedagogical standpoint. Coaches that use an athlete-centered approach create a supportive and empowering atmosphere that promotes players' growth, engagement, and overall development, resulting in enhanced athletic performance and long-term success (Ahlstrand & Anttila, 2020).

One of the useful tools for understanding the use of athlete-centeredness in coaching is to check the teaching methods applied by the coaches in their training with Mosston's Spectrum of Teaching Styles (Mosston & Ashworth, 2008; Kılıç & Ince, 2023; Pill, SueSee, Rankin, & Hewitt, 2021). Mosston and Ashworth's Spectrum of Teaching Styles describes 11 teaching methods: A: Command, B: Practice, C: Reciprocal, D: Self-Check, E: Inclusion, F: Guided Discovery, G: Convergent Discovery, H: Divergent Production, I: Learner Designed Individual Program, J: Athlete-initiated, and K: Self Teaching. These teaching methods characterized in a continuum from teacher-centered (Style A) to learner-centered (Style K). Recently, Phill et. al (2021) have recommended the use of Mosston's (2008) Spectrum of Teaching Styles by underlying its usefulness in coaching settings. Kılıç & Ince (2019, 2021) adapted and validated an instrument using the Mosston's (2008) approach to examine coaches use of teacher-centered approaches (or the reproductive where coaches are dominant in decision making during the training, Styles from A to E), problem solving (Styles from F to H), and athlete-initiated approaches (athletes are dominant in decision making during the training, Styles from I to K).

A recent study by Kılıç & Ince (2023) has indicated that coaches are dominantly using and attaching value to the coach-centered reproductive teaching methods as compared to more athlete-centered problem solving and athlete-initiated coaching methods. Moreover, while more and more experts see the importance of using athlete-centered teaching methods, research, and literature on the use of teaching methods by basketball coaches are very limited. In this regard, there is no study on this issue in the Morocco context as well.

As previously stated, the use of technology by the basketball coaches is the second topic of interest in this study. In today's fast-evolving technology, coaches' technological abilities are increasingly being acknowledged as critical for effective

coaching (Romar et al., 2018). Coaches may offer objective feedback, measure progress, and enhance training programs by integrating technology tools such as video analysis, wearable devices, and data analytics (Martindale et al., 2007). Coaches who are proficient in the use of these technologies have a unique edge in terms of improving performance and encouraging athlete growth.

Technological abilities are critical for good coaching, and coaches must have certain skills and expertise to use technology for athlete development (Kırkoğlu, 2023). The literature has recognized several technical abilities. The ability to use video analysis tools is a key technological capability for coaches. Coaches can use video analysis to collect and analyze athletes' performances, offering useful input for skill development (Thomas & Gilbert, 2016). Coaches must be skilled in using video recording equipment, and video editing software, and successfully analyzing and communicating feedback based on video observations (Haugen & Buchheit, 2016). Integration of wearable gadgets and performance tracking systems is another critical technical capability. These technologies give coaches real-time data on physiological and biomechanical characteristics including heart rate, speed, and distance traveled by players (Shei et al., 2022). Coaches must be capable of using and analyzing data collected by these devices to make educated judgments about training programs and performance optimization (Abraham et al., 2006).

Technological affinity of coaches has emerged as a critical aspect in the incorporation of technology into coaching activities. Coaches that have a strong technology affinity are more likely to accept and successfully use technological tools, resulting in improved athlete development (Bilal et al., 2022). Coaches' technological affinity is influenced by personal experience, exposure to technology, and self-efficacy, whereas access to technology, organizational support, and training opportunities impact their affinity in the coaching context (Pascal et al., 2015), improved communication, data-driven insights, remote coaching options, and personal skill development are among the advantages of coaches' technology affinity. However, there are obstacles such as opposition to change and uneven access to technology. Further study is needed to investigate the influence of technological affinity on athlete results and to address ethical concerns linked with technology

usage in coaching, according to the literature (McCosker et al., 2022). Bridging the digital gap and adopting ethical guidelines are critical for encouraging fair access and appropriate use of technology in coaching practices.

Moreover, coaches' technology integration self-efficacy, or conviction in their capacity to properly integrate technology is essential, too. Coaches who have a high level of self-efficacy in technology integration are more likely to participate in technology-related professional development, seek help when needed, and effectively integrate technology into their coaching routines (Turel, 2014). To summarize, coaches need specialized technical competencies to assist athlete development, such as video analysis skills and the integration of wearable gadgets. Coaches' technological affinity and technology integration self-efficacy are also crucial elements in their successful use of technology in coaching.

Basketball coaches who are technologically savvy are more likely to accept and effectively apply technology in their coaching activities (Li, 2022; Haddad & Draxler, 2020). This involves using video analysis technologies to analyze games, performance monitoring systems to evaluate players, and communication platforms to coordinate teams (Yoon et al., 2019). Moroccan basketball coaches with a technical bent may use these technologies to improve their coaching efficacy, maximize player development, and acquire a competitive advantage.

Technology integration self-efficacy is critical to coaches' capacity to successfully integrate technology (Semiz & Ince, 2012), Coaches must be confident and skilled in their abilities to effectively incorporate technology into their coaching approaches (Vealey, 1988), Increasing Moroccan basketball coaches' self-efficacy in technology integration through training and assistance can enable them to effectively use various technological tools, allowing for enhanced player evaluation, training program creation, and game plan formulation.

While evaluating the coaches' use and value of teaching methods, affinity to technology, and technology integration their age, educational level and coaching certificate level could be critical components to examine. Younger coaches may be

more prone to athlete-centered teaching methods and technology integration in coaching due to their familiarity with the autonomy supportive teaching methods and technology in their general education and daily life. Older coaches are possibly educated and trained in a more traditional coach centered teaching approaches and with limited use of technology which could limit their teaching method repertoire and use of technology in their professional practice. Similar to age, educational and coaching certificate level could impact on the coaches teaching approaches and technology integration in coaching. As educational or coaching certificate level increase, coaches understanding of how athletes learn and effective integration of technology into the practice could be better due to their longer and deeper educational experience on the topic.

### **1.1. Purpose of the Study**

The purpose of this study is to examine basketball coaches' self-reported use and value of teaching methods, affinity to technology, and technology integration self-efficacy by age, educational level (lycée, undergraduate, graduate), and coaching certification categories (Mini Basket vs. Level 1-2-3 Coaching Certificates) in Moroccan context.

### **1.2. Research Questions**

In this study, following research questions are examined:

1. Do the basketball coaches' self-reported use and value of teaching methods (reproductive, productive problem-solving, and productive athlete-initiated) vary by coaches' age, educational level (lycée, undergraduate, graduate), and coaching certification categories (Mini Basket vs Level 1-2-3 Coaching Certificates) in Morocco?
2. Do the basketball coaches' Affinity to Technology Interaction (ATI) scores vary by coaches' age, educational level (lycée, undergraduate, graduate), and coaching certificate categories (Mini Basket vs Level 1-2-3 Coaching Certificates) in Morocco?

3. Do the basketball coaches' Technology Integration Self-Efficacy (TISE) scores vary by coaches' age, educational level (lycée, undergraduate, graduate), and coaching certificate categories (Mini Basket vs Level 1-2-3 Coaching Certificates) in Morocco?

### **1.3. Significance of the Study**

The significance of this study is profound, as it has the potential to reshape the landscape of Moroccan basketball coaching by meticulously examining technology integration and education tailored to the needs of athletes. Through a comprehensive investigation into athlete-centered teaching approaches, coaches' technological affinity, and technology integration self-efficacy, the research seeks to uncover methods that can significantly enhance coaching effectiveness and propel player development. The exploration of coaching paradigms aligns closely with the research questions, specifically addressing how coaches' age, educational background, and certification categories influence their teaching methods, technological interactions, and self-efficacy in technology integration. By revealing insights into the complex interplay of these factors, the study lays the groundwork for a potential shift in coaching methodologies in Morocco, advocating for the seamless integration of modern technology with personalized, athlete-centered pedagogies. Additionally, the inquiry into technology affinity and integration self-efficacy offers a sophisticated understanding of the intrinsic technical proclivities within the coaching community. As the research delves into these crucial aspects, it not only provides a roadmap for improving coaching methods and fostering player growth but also fills a substantial information vacuum in Moroccan basketball coaching. The findings of this study may guide strategic decision-making and focused interventions in coach training programs, ultimately enhancing the competitive edge of Moroccan basketball by establishing a holistic growth environment that encompasses both physical performance and athletes' personal autonomy within the broader context of sports and society.

### **1.4. Definition of Terms**

The following are the operational definitions of the variables explored in this study:

*Teaching Methods:* Reproductive, productive problem-solving and productive athlete-initiated teaching methods (Kılıç & Ince, 2023) which are rooted on the (Mosston & Ashworth, 2008) Spectrum of Teaching Styles.

*Reproductive Teaching Methods:* Command, Practice, Reciprocal, Self-Check, and Inclusion teaching styles (Mosston & Ashworth, 2008; Kılıç & Ince, 2023).

*Productive Problem-Solving Methods:* Guided Discovery, Convergent Discovery, and Divergent Production teaching styles (Mosston & Ashworth, 2008; Kılıç & Ince, 2023).

*Productive Athlete-Initiated Methods:* Learner's Individual Designed Program, Learner initiated, and Self-Teaching teaching styles (Mosston & Ashworth, 2008; Kılıç & Ince, 2023). In productive athlete-initiated methods athletes have greater autonomy, active engagement and control over their learning process (Kılıç & Ince, 2023). Therefore, productive athlete-initiated methods are considered more athlete-centered than the other methods.

*Affinity for Technology:* Coaches proclivity to actively participate in intense technological contact (Franke et al., 2019).

*Technology Integration Self-Efficacy:* Coaches' confidence and capacity when teaching with technology (Perkmen, 2008).

*Coaches Age Grouping:* Age grouping of coaches (18-24, 25-34, 35-44, 45-54, and 55-65 years old) according to the age (years) they completed. While the youngest group represents an age range of five years, the following groups represent age ranges of 10 years.

*Coaches Educational Level:* Educational level grouping (lycée/high school, undergraduate and graduate) of coaches with respect to their most recently completed education level. Undergraduate degree represents the completion of four-

year university undergraduate program. Graduate degree represents completion of Master of Science or PhD. Program.

*Coaches Coaching Certification:* Coaching certificate categorization of coaches under two major groups, 1) Mini Basketball, and 2) 1, 2 and 3<sup>rd</sup> level coaching certificate according to the Morocco Basketball Federation coaching certificate levels.



## **CHAPTER 2**

### **REVIEW OF LITERATURE**

By addressing specific research questions related to coaches' age, educational level, and coaching certification categories, the study aims to discern patterns and variations in coaches' perceived use and value of teaching methods, Affinity to Technology Interaction (ATI) scores, and Technology Integration Self-Efficacy (TISE) scores. Ultimately, the aim is to provide evidence-based recommendations that can inform coach development programs, improve coaching effectiveness, and foster player development within the evolving landscape of basketball coaching in Morocco.

This section methodically organized its examination of the literature based on the study's goal by addressing the following subjects in a systematic order. Beginning with athlete-centeredness, the research delves into the fundamental premise of coaching, emphasizing the significance of putting players/athletes at the center of the coaching process. As a subtitle, teaching methods in sports relate to athlete-centeredness in this section. Literature review then flowed into the use of technology in coaching, shining light on how current digital tools and data analytics have become indispensable for coaches in maximizing training and performance. Following that, the research investigated the larger link between technology and sport, stressing the enormous influence technology has had on numerous sports disciplines, improving both the spectator experience and player performance. The literature review then focused on basketball coaching, examining the specific obstacles and opportunities that technology brings to this sport. Following that, it looked at the shifting function of technology in sports coaching and performance enhancement, emphasizing how it has constantly evolved to suit the ever-changing demands of coaches and players. The section then switched to explain the benefits

that technology provides to sports coaches, such as data-driven decision-making and individualized training regimens. Finally, Technology Integration Self-Efficacy (TISE) and coaches' affinity for technology interaction (TISE - Technology Integration Self-Efficacy, Affinity for Technology Interaction) are discussed.

## **2.1. Athlete-Centeredness**

Athlete-centeredness is a pivotal concept in sports leadership. It highlights the importance of athletes in the dynamics of sports teams. A recent study based on organizational and sports coaching literature emphasizes the importance of player leadership within sports teams (Loughead, 2017). This method enables coaches to motivate and encourage their players to participate actively in the coaching process, resulting in a more athlete-centered atmosphere (Souza & Oslin, 2008).

The basic principle underlying athlete-centeredness is to create an environment where athletes are active participants in their growth rather than passive beneficiaries of instruction. This method puts athletes at the center of their development, emphasizing holistic perspectives and co-creating their total development (Dohlsten et al., 2021). Beyond typical coaching approaches, it emphasizes the value of cooperation, positive culture, affirmative pedagogies, and shared learning (Bowles & O'Dwyer, 2020). Coaches should employ teaching strategies that allow players to become active problem solvers and initiators of their learning to embrace athlete-centered coaching fully.

According to Dohlsten et al. (2021), athletes require athlete-centered coaching, an emphasis on holistic viewpoints, and co-creation of their total development. The study of Bowles & O'Dwyer (2020) delves into the methodologies used by the coach-researchers to create an athlete-centered coaching environment based on a positive culture, affirmative pedagogies, and shared learning. The quality of the interaction between coaches and athletes, which is at the heart of coaching and capable of determining success, defines coaching effectiveness (Jowett, 2017). Three recommendations for applying an athlete-centered approach to coaching were presented by Souza & Oslin, (2008). The objective in this scenario is to create a good

and safe atmosphere, promote player involvement, and provide time for it to occur. Examples of excellent practice are required for athlete-centered philosophies and frameworks to be effectively implemented into coaching tactics. The All-Blacks' (New Zealand National Rugby Team) motivational climate reflected an autonomy-supportive coaching approach by providing choice (e.g., ownership and accountability for decision-making), encouraging athletes to take action (e.g., leadership group, responsibility), and using encouraging performance feedback (e.g., feedback on improving strengths, not just reducing weaknesses) (Hodge et al., 2014).

Coaches guide players in identifying issues, collaboratively working to find answers, building problem-solving abilities, and creating a sense of responsibility and accountability as in the All-Blacks' case. At the same time, the athlete-initiated teaching technique allows athletes to take the lead in their learning journey, allowing them to explore and improve their talents while coaches provide support and assistance as needed. This method eventually encourages athletes to become self-sufficient and promotes confidence in their skills (Milbrath, 2017). The adoption of these coaching strategies in basketball can be both recognized and unknown.

While there is evidence that highly successful coaches in top sports may already use an athlete-centered strategy (Hodge et al., 2014), the extent to which this method is widely used in basketball, remains to be discovered. The necessity of providing a pleasant and safe environment, increasing player engagement, and enabling time for athlete-driven growth are all well-known features (Souza & Oslin, 2008). These ideas may be used to improve coaching effectiveness in various basketball scenarios. However, further study is needed to determine the extent to which coaches embrace athlete-centered coaching, the unique problems they confront, and the cultural differences that may impact its implementation.

Integrating athlete-centeredness into coaching requires a critical emphasis on how the material is delivered and instructed, which emphasizes as a component of coaching expertise (Gilbert & Côté, 2012). This factor is critical for the successful implementation of training programs. According to Gearity (2012), coaches' instructions may either considerably enhance or potentially harm athletes'

development, depending on how well coaches are informed about the ideal tactics adapted to athletes' learning and performance needs. The instructional parts of coaching are based on well-established learning and teaching theories, such as those presented by Kidman et al. (2005) and Armour, (2010). The most successful sport's learning occurs when coaches effectively link the learning intents with instructional tactics or teaching methods in coaching.

Coaching techniques, which stress active athlete engagement in their growth through problem-solving and self-initiated learning, are well acknowledged to play a critical role in basketball, as in any sport. Coaches frequently use a combination of teaching methods, including athlete-centered and traditional coach-centered ones, to promote skill development and performance (Kılıç & Ince, 2023; Milbrath, 2017). However, the extent to which Moroccan basketball coaches accept those approaches is still being determined, and more study is needed to evaluate their adoption. Furthermore, it is critical to understand the unique obstacles and cultural elements that influence the adoption of athlete-centered coaching in Moroccan basketball since these details can considerably impact coaching methods. In conclusion, while the value of various teaching approaches in basketball is acknowledged, further research is needed to uncover their prevalence and influence within the context of Moroccan basketball (Kılıç & Ince, 2023; Milbrath, 2017).

## **2.2.Teaching Methods in Sport Context**

Teaching methods have a direct connection with athlete-centered pedagogies in coaching setting (Kılıç & Ince, 2023; Pill, SueSee, Rankin, and Hewitt, 2021). Mosston and Ashworth's (1972; 2008) well known Spectrum of Teaching Styles in Physical Education, which has recently been adapted to coaching setting by Pill, SueSee, Rankin, and Hewitt (2021), describes the 11 distinct teaching methods (styles) denoted by the letters from coach-centered to athlete-centered in a continuum; (A) Command, (B) Practice, (C) Reciprocal, (D) Self-Check, (E) Inclusion, (F) Guided Discovery, (G) Convergent Discovery, (H) Divergent Discovery/Production, (I) Learner's Individually Designed Program, (J) Learner Initiated, and (K) Self-Teaching. Methods from A to E as a group are called

reproductive styles due to direct teaching (teaching a known model or knowledge to learners) approach. Methods from F to K are identified as productive styles where discovery of new knowledge by the learner is at the core of teaching (Mosston and Ashworth, 2008). Main characteristics of each method/style is presented below:

*Command (A):* In this style/method, all instructional decisions including planning, performing and evaluation of a task made by the coach. The coach introduces, explains, and demonstrates how to perform the selected motor task. The distinguishing characteristic of the command style is that the athletes move on a signal (a command) from the coach. This approach to teaching considered as dominantly coach-centered.

*Practice (B):* In this style/method the coach demonstrates a specific task and the athletes practice on their own time while making location, order of tasks, starting time per task, pace and rhythm, stopping time per task, interval, initiating questions for clarification, attire, and posture related decisions. After the completion of task, the coach provides direct and individual feedback to the athlete. It is used when a certain task must be performed according to a specific model or when the athletes are able to perform the task at various levels.

*Reciprocal (C):* In this style/method, coach give a task card describing the progression of the skill to a pair of (a doer and an observer) athletes. Doers perform the task, and observer provide feedback to doer. Then, doer and observer change their position. The coach is in the setting to support the observer if necessary. This style is valuable for both doer and observer. The doer receives constant feedback, and the observer learn through observation.

*Self-Check (D):* In this style/method an athlete is provided with a criteria sheet to work independently on performing a task by the coach. The athlete engages in self-assessment by using the criteria sheet. The coach is in the setting to answer questions of the athlete. This style allows the athletes' evaluating their performance.

*Inclusion (E):* In this style/method, coach give athletes a task card with various levels of difficulty. The athletes decide their entry level and progression among the levels.

This style is usually used when there is a heterogonous group of athletes with widespread capability or proficiency level.

*Guided Discovery (F):* In this style/method, the coach develops a series of logically designed questions to ask the athletes when they work on a task. The athlete works through a series of questions in sequence, and each answer leads to the next question. The athlete comes to discover a predetermined concept by the coach. This style is usually used when it is necessary for the athletes to discover the rationale behind the task.

*Convergent Discovery (G):* In this style/method, the aim of the coach is to encourage athletes to think critically and come up with a solution best for the situation. Athletes work on the task to find the best solution.

*Divergent Discovery/Production (H):* In this style/method, the coach develops a single question for the athletes to answer. The question has multiple correct solutions. Athletes work on the task to find those solutions. This teaching style is usually used in introducing various strategies and tactics, and availability of multiple correct answers in a problem-solving situation.

*Learner's Individually Designed Program (I):* In this style/method, the role of the athlete is to make all decisions regarding the learning task/subject matter. Athletes choose the task/subject that needs to be learned, designing the activities towards the goal, to perform the tasks and create the criteria for successful performance. This teaching style is characterized by providing more autonomy to the learner in designing the learning.

*Learner Initiated (J):* In this style/method, the athletes' responsibility is to independently initiate their own learning experience by deciding the learning aim, content, implementation, and assessment criteria. This teaching style is characterized by shifting the learner's initiation, responsibility, and learning experience from the coach to the athlete.

*Self-Teaching (K)*: In this style, all decisions about the learning are given by the athlete. This style is completely depending on the autonomy of the athlete in the learning process.

Regardless of how the styles are framed, the capacity to teach in several ways to meet the vast range of learners, subjects, and educational goals implies that effective instructor should master many teaching styles (Kulinna & Cothran, 2003). The growing relevance of instructors' understanding of multiple teaching styles are linked to several educational advancements. First, growing recognition of the constructivist nature of learning shows that traditional instructor-centered approaches may not promote higher order learning in cognitive domain. Whether seen through the lens of a sociocultural or an individually oriented constructivist perspective, learner's active involvement is critical to learning, and it is likely encouraged through a range of instructional techniques (Kulinna & Cothran, 2003). With so much evidence for the value of diverse teaching styles, educators need to learn what methods are currently being employed and how instructors view the potential of various styles to fulfill different educational goals.

The findings of a recent study on young athletes' developmental outcomes in context show a substantial drop in players' developmental sports outcomes as they mature (Kılıç & İnce, 2021). Unfortunately, little study has been conducted in this area. Because many of the approaches do not belong to a common conceptual framework, much of the information deficit is due to the practical as well as theoretical difficulty of comparing diverse teaching methods (Kulinna & Cothran, 2003). The category demonstrates an evolution from coach-centered to athlete-centered teaching styles and is an attempt to define a unifying paradigm of education that incorporates a diverse range of teaching styles.

### **2.3. Use of Technologies in Coaching**

The study of technological applications in the coaching area demonstrates a substantial change toward improving coaching practices, athlete development, and performance evaluation. This academic synthesis draws on a variety of studies to

illuminate the multifaceted roles that technology plays in coaching, highlighting the relationships between coach demographics, technology affinity, and self-efficacy in using technological tools, particularly in the Moroccan basketball coaching milieu.

The increased use of technology in coaching techniques is in response to a growing desire for better learning settings, communication channels, and performance evaluation systems. Coaches across all sports disciplines are employing a range of technological breakthroughs to meet these improvements, seeing the opportunity to integrate technology into their coaching paradigms. This integration not only meets modern athletes' technological expectations, but it also improves coaches' educational experiences by providing access to invaluable knowledge bases, increasing coaching effectiveness (Cushion & Townsend, 2019; Dray & Howells, 2019; Wells et al., 2023). Furthermore, technology helps to organize coaching sessions, monitor coach-athlete interactions, and manage coaching objectives and responsibilities (Pascal et al., 2015). Coaches' tendency to use technology in training environments is highly impacted by their efficacy in using these tools, with better self-efficacy correlated with broader technology utilization (Rittenberg et al., 2022).

Technologies like mobile phones, virtual worlds, and wireless sensor networks are essential for providing customized training interventions and ongoing coaching. These technologies promote athlete growth and performance improvement by enabling real-time performance tracking, quick feedback, and the building of self-efficacy (Baca & Kornfeind, 2006; Op Den Akker et al., 2014). One novel method to individualized coaching is the customization of coaching using technology, particularly in adjusting system behavior to meet the demands of certain athletes (Op Den Akker et al., 2014).

Technology may also be used to evaluate athletes' responses during seasonal planning and use real-time data to manage issues like injury risks and weariness (Fox et al., 2017). Furthermore, the creation of online coaching programs highlights the important role that technology plays in athlete development and coach education, with the goal of empowering coaches to promote life competences via sports (Camiré et al., 2020).

The creation of feedback systems unique to a certain sport is another aspect of integrating technology into coaching. By embedding sensors and gadgets into sports gear or strapping them on players, these systems collect a wealth of biomechanical, physiological, cognitive, and behavioral data. This kind of information is essential for assessing performance and developing training plans that target improving certain abilities and lowering the risk of injury (Baca & Kornfeind, 2006; Cunniffe et al., 2009). Additionally, by using accurate monitoring and intervention procedures, technology integration in psychological skills training can improve performance (Siekańska et al., 2021; Ziv & Lidor, 2016). In addition to improving accessibility and inclusivity, these technology interventions give coaches access to a wealth of information and communication channels that supplement conventional coaching techniques (Carmouche et al., 2018; Muuraiskangas et al., 2022). Through technical innovation, the introduction of virtual reality technology gives traditional coaching practices a competitive edge (Thatcher et al., 2021).

This thorough examination of coaching applications of technology, from psychological skill development to virtual reality and real-time athlete monitoring, provides a complete framework for analyzing how Moroccan basketball coaches now use technology. We can discover particular technology tools and practices that may improve coaching efficacy in this unique environment by analyzing current technological use in light of possible applications that have been identified in the literature.

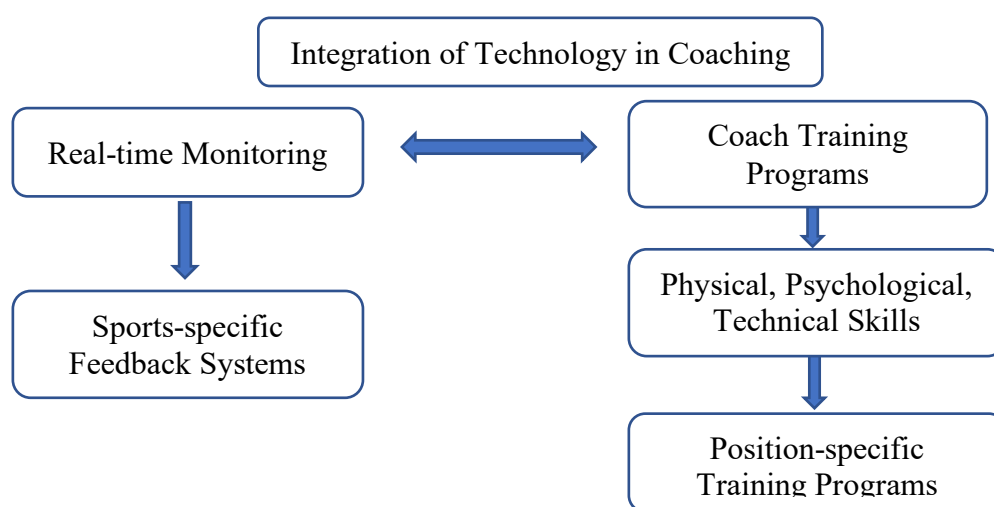


**Figure 1:** Transformative Integration of Technology in Coaching for Enhanced Athlete Development and Performance

Figure 1 shows how technology has been revolutionarily integrated into coaching, highlighting how it has revolutionized athlete development and performance growth. Real-time monitoring, which makes use of technology to continually evaluate each athlete's status and reduce the likelihood of weariness and injuries, is essential to this integration. Through the use of sports, this data-driven method enhances coach training programs and facilitates the transfer of important life skills. Moreover, sport-specific feedback systems that gather extensive biomechanical, cognitive, and behavioral data support psychological skill training programs and help provide more sophisticated performance assessments. This deliberate use of technology results in the creation of position-specific training plans that are methodically designed to enhance athletes' abilities and reduce the likelihood of injuries. This is an excellent example of how technology can be used to coach athletes to previously unheard-of levels of success and well-being.

#### **2.4. Technology and Sport**

The way that technology is used into sports is a dynamic and developing sector that has drastically changed how people participate in, coach, and play sports. This review aims to bring together the existing body of research on the impact of technology on sports, with a focus on coaching practices, injury prevention, fan interaction, and performance improvement. It also includes a section on the topic of coaching in Moroccan basketball.

Technology has sparked a revolution in sports by allowing for participant safety, performance enhancement, and the creation of a worldwide competitive balance. According to Jönsson (2010) & Ratten (2020), technology advancements have made sports environments more welcoming and gender-neutral. A historical review of sports technology is given by Kos et al. (2018), which also explains how new developments have brought revolutionary components including systems for preventing injuries and performance-enhancing equipment. Thanks to technology advancements, sports are now safer, more accessible, and more pleasurable for players, coaches, and enthusiasts (Loland, 2002; Ráthonyi et al., 2018).

Empirical research highlights how technology may be used to improve sports performance and lower the frequency of injuries. While Griggs et al. (2020) address the possibilities of technology in supporting Paralympic athletes through specialized equipment, Faure et al., (2020) investigate the effectiveness of virtual reality (VR) in replicating complicated training situations for team sports. The development of adaptive sports technology, particularly prosthetics, not only improves performance but also makes it easier for people with impairments to participate in sports (De Luigi & Cooper, 2014). Furthermore, the use of technologies such as real-time extended reality (XR) feedback systems is crucial in furnishing accurate and unbiased input, which is vital for the enhancement of sports skills (Geisen & Klatt, 2022).

## **2.5. Technology and Basketball Coaching**

Basketball coaching has seen a significant change with the introduction of technology, bringing with it improved training techniques, performance statistics, and player development programs. This development, which is firmly rooted in contemporary sports science discourse, demonstrates the complex interplay between coaching techniques and technology advancements.

Svilar et al. (2019) demonstrated the effectiveness of microsensor technology in professional basketball for detecting physical intensity and coaching methods by comparing 5vs5 training games to actual match scenarios. Their research demonstrates technology's potential to assess physical intensity and adapt coaching tactics, hence improving the entire training environment. This study supports Baena-Raya et al. (2023)'s inquiry into how technology contributes to identifying crucial aspects influencing basketball player performance. Their results validate the use of technology in helping coaches design more focused training regimens that enhance players' preparedness for competition and boost their performance.

Furthermore, the literature covers the application of artificial intelligence (AI) in sports analytics (Rodrigues, 2020). Li & Xu (2021) and Yang (2020) emphasize AI's capacity to systematically assess, evaluate, and enhance training objectives, gaming

strategies, and injury prevention methods while emphasizing player safety. These improvements highlight the critical role that technology plays in upgrading basketball training practices and moving them towards a more flexible and evidence-based model.

Demenius & Kreivytė (2017) and Yang et al. (2022) highlight the benefits of data analytics and light deep learning in sports, including enhanced team dynamics, increased fan engagement, and automated video analysis for strategic insights. These breakthroughs show how cutting-edge analytical tools may transform coaching techniques.

Collectively, these studies give a complete overview of the several benefits of technology integration in basketball coaching, including enhanced training regimens, injury prevention, strategic game preparation, and performance evaluation. This lengthy research establishes the basis for investigating Moroccan basketball coaches' views and use of technology, situating the current study within the larger narrative of technology's revolutionary effect on sports

## **2.6. Exploring Technology's Role in Coach Education and Learning Enhancement**

The use of technology in coach education is widely acknowledged as a revolutionary method to improving both teaching and learning experiences in the coaching domain. The introduction of technology-enhanced learning (TEL) is a critical instrument for supplementing the pedagogical framework of coach education, providing considerable support for coaches' instructional and developmental processes (Cushion & Townsend, 2019). Furthermore, the use of e-portfolios in higher education coaching programs is identified as a method to enrich the educational journey of student-coaches by providing them with the necessary theoretical and practical knowledge to effectively use technology in coaching scenarios (Dray & Howells, 2019).

Furthermore, the importance of coach education programs in delivering complete training, such as hands-on experiences, internships, mentorships, and critical

reflection practices, is highlighted as crucial to improving the coaching experience (Kavussanu et al., 2008). This viewpoint agrees with Lyle and Cushion (2017) argue on the importance of professional coach educators inside the formal structure of coach education and learning processes.

The notion of pedagogical coaching emerges as a basic paradigm for helping students' personal and professional development, with evidence of its efficacy in harnessing both instructors' and students' own talents to accomplish targeted educational goals (Pisklova & Bekoeva, 2021). Furthermore, experiences gained from official mentoring programs included in coach education frameworks are praised for contributing to knowledge improvement and development of skills (Koh et al., 2017), emphasizing the value of thoughtful coach education, opportunities for professional growth, and the supportive role of modern technology and guidance (Hubball & Garcia, 2020). Additionally, Technology plays a critical role in data collecting, including performance measurements, player assessments, and game analysis, all of which are essential to the methodological, conceptual, and operational aspects of technology-enhanced learning in coaching (Cushion & Townsend, 2019). Basketball coaches can use advanced data analytics to improve fan engagement and team performance, demonstrating how technology can improve game strategies and effective coaching (Demenius & Kreivytė, 2017). This demonstrates the power of technology to provide coaches with vital data and tools for enhancing player growth and coaching approaches.

In summary, the academic and professional communities agree that incorporating technology into coach education and enhancing learning experiences is a powerful mechanism for improving coaching efficacy, providing real-world applicability, and advancing coaching pedagogy—particularly in the realm of basketball coaching.

## **2.7. Technology's Evolving Role in Athletic Coaching and Performance Enhancement**

The introduction of technology into athletic coaching has spurred extensive discussion and study within the sports science community. Technological

improvements, particularly in computer and information technology, have provided coaches with unique tools and insights to improve athlete performance (Bilal et al., 2022). This literature review aims to provide a complete assessment of technology integration in sports coaching, with a particular emphasis on its relevance, impact on coaching effectiveness, and the evolution of coaching approaches.

Wearable technologies, such as sensors and inertial measurement units, are known for their ability to improve athletes' methods and coaching practices (Adesida et al., 2019; Brice et al., 2018). Coaches' investigation of various technologies is motivated by the desire to improve athletes' performance, with a focus on understanding the consequences of technology on athletic performance and health decisions (Luczak et al., 2020). Furthermore, the significance of technology in promoting feedback on performance and skill development is critically assessed for its value in training situations for both coaches and athletes (Liebermann et al., 2002). Technology also plays an important role in performance tracking and data availability for athletes, encouraging a stronger connection to their sporting activities (Rapp & Tirabeni, 2018).

An increasing number of coaches are using technology into their training regimens, choosing technologies that claim to improve athlete performance via usability and efficacy (Wells et al., 2023). Coaches, on the other hand, should realize that sports success entails more than just technical talent and choose when it is suitable to include technology into athletes' learning pathways (McCosker et al., 2022). Information technology has also been shown to improve physical activity and athletic performance, hence boosting athlete development (Kettunen et al., 2019). Coaches use technology to improve athlete performance on technical, tactical, physical, and psychological levels (Bilal et al., 2022).

As technology advances, it becomes a more valuable tool in sports, capable of boosting players to higher performance levels (Rittenberg et al., 2023). However, ethical concerns about the use of technology in sports, particularly surveillance technologies and their influence on players and coaches, have been raised (Jones & Toner, 2016). The use of technology into coaching methods has radically altered the

coaching environment, affecting areas of planning, session delivery, and communication without requiring coaches and athletes to connect directly (Kirkland & Cowley, 2023). Furthermore, as technology and data become more prevalent in educational settings, athletes and coaches will be able to gather, evaluate, and use performance data to improve their training methods (Turcotte & Hollett, 2023).

To sum up, improvements in wearable technology, data analytics, and individualized training paradigms are propelling the rapidly developing area of technology integration in sports forward, considerably improving coaching approaches and athletic performance.

## **2.8. Affinity for Technology Interaction**

The idea of Affinity for Technology Interaction (ATI), as defined by Franke et al. (2019), highlights an important psychological dimension in the field of human-computer interaction. It assesses an individual's proclivity to interact with technical tools and systems, representing the various levels of comfort and motivation that people display while using technology. This construct's significance is recognized across several professional domains, emphasizing its critical role in clarifying technology adoption and use habits.

In the context of sports coaching, ATI is extremely important. Coaches with higher ATIs are more likely to use new technology into their training, performance analysis, and athlete communication tactics. Such a proclivity for technological use may greatly improve training methodology, athlete engagement, and overall coaching efficacy. Furthermore, tailoring coaching techniques to athletes' various ATI levels can enable the efficient and tailored incorporation of technology into coaching activities (Franke et al., 2019).

ATI's theoretical underpinning is based on ideas of technology acceptability and human-computer interaction theory. These findings imply that people's views regarding technology have a significant influence in shaping their involvement and competency with technological systems. According to the Technology Acceptance Model (TAM) and self-efficacy theories, people who see technology as good and

think they have the ability to use it are more likely to engage positively with technological tools.

Extensive study on ATI has been undertaken with diverse groups of experts, giving interesting results. For example, research in the educational sector has found a link between teachers' ATI and their use of digital tools in pedagogical processes, implying that higher ATI levels among teachers are associated with more effective technology use in education (Henrich et al., 2022). Similarly, studies in the healthcare business shows that professionals with high ATI levels are more likely to use electronic health records and telehealth services, which improves patient care and operational efficiency (Busch et al., 2022). Corporate studies also show that individuals with high ATI contribute greatly to corporate innovation and productivity as a result of their willingness to adopt new software and processes.

In conclusion, while the importance of ATI in professional contexts is well established, with greater ATI being associated with favorable results in technology use, the particular implications of ATI for sports coaches and their technological integration techniques remain an area open for research. Unraveling these processes might unravel the way for new coaching approaches and enhanced athlete performance, representing a huge step forward in the intersection of technology and sport coaching.

## **2.9. Technology Integration Self-Efficacy**

The study of the dynamics of technology integration and educational outcomes, as well as the role of coaching efficacy in sports education, reveals a complex terrain of factors that contribute to successful technology adoption and effective teaching and coaching approaches. Beginning with Perkmen's (2008) foundational work, the interplay between Technology Integration Self-Efficacy (TISE) and Outcome Expectation (OE) is highlighted as a bidirectional relationship, laying the groundwork for understanding the nuanced interactions that predict performance when integrating technology into educational settings. This concept of self-efficacy and outcome expectations as predictors of performance is extended to pre-service

teachers by studies such as Abbitt (2011), Anderson et al. (2011), and Semiz & Ince (2012), which each investigate different aspects of technological self-efficacy, ranging from Technological Pedagogical Content Knowledge (TPACK) to attitudes and intentions toward technology use in educational settings. These studies highlight the crucial significance of self-efficacy beliefs and technological competence in determining future instructors' capacity to seamlessly integrate technology into their teaching methods.

The discussion then shifts to sports education, where research by Rittenberg et al. (2022), Lisinskiene (2018), Strachan et al. (2016), and Banwell et al. (2019) focuses on the impact of coaching efficacy on technology adoption and the development of interpersonal connections between coaches and athletes. Rittenberg et al. (2022)'s study focuses on how coaching efficacy might build an environment conducive to technology adoption in golf teaching, demonstrating a direct relationship between a coach's self-efficacy and willingness to embrace technological tools. Lisinskiene's (2018) research on the impacts of coach education programs emphasizes the significance of such initiatives in establishing coach-athlete interactions and so improving the entire educational experience.

Strachan et al. (2016)'s insights into the positive reception of an online application designed for youth sports development, as well as Banwell et al. (2019)'s examination of mentorship in encouraging women's participation in coaching, contribute to underlining the value of mentorship and to a better understanding of the mechanisms by which technology and educational programs can be used to advance coaching practices and foster inclusive, supportive environments in sports coaching.

Together, these studies form a comprehensive narrative that not only emphasizes the importance of technological self-efficacy and outcome expectations in education, but also demonstrates the transformative power of coaching efficacy and mentorship in promoting technology integration and improving interpersonal dynamics in sports education. This collection of research provides a nuanced view of the synergistic impacts of technology integration, self-efficacy beliefs, and coaching efficacy, providing avenues to better educational practices and coaching approaches in both academic and sports settings.

**Table 1:** Studies examining the use of technology in sports coaching.

| Author (Year)             | Participants     | Instruments                                              | Main findings                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|---------------------------|------------------|----------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (Sugar & Van Tryon, 2014) | 60 Coaches       | Survey                                                   | Resources provided by a virtual technology coach for collaboration, discussion, learning, and sharing are seen as helpful.                                                                                                                                                                                                                                                                                                                                                |
| (Barron et al., 2009)     | 46 Coaches       | Program assessment, survey, focus groups, and interviews | Most of the coaches and facilitators who attended the courses were excited about the peer coaching idea and had good views about technology integration.                                                                                                                                                                                                                                                                                                                  |
| (Liebermann et al., 2005) | 27 Coaches       | Survey                                                   | Building a positive relationship with the players was a key priority for top-tier coaches. Even though they all use information technology for other purposes, the members of this group of seasoned coaches generally appear to understand the general significance of sport sciences and to be positive about the use of sport technologies. However, they do not always put these positive attitudes into actual practice within their competitive sport environments. |
| (Bilal et al., 2022)      | 205 Participants | Survey, T-TAM                                            | Third-level coaches employ technology more extensively in training and competition than their first- and second-level counterparts.                                                                                                                                                                                                                                                                                                                                       |
| (Hassan et al, 2022)      | 215 Coaches      | Lieberman's (2005) standard scale                        | There is a favorable and strong association between sports coaches' performance and information literacy and information technology utilization. In addition, there is a substantial difference in the information literacy variable between the opinions of the coaches and the public, although no significant difference was seen in the degree of information technology usage.                                                                                       |
| (Jaswal et al., 2019)     | 25 Coaches       | ATI,CSEM, (PRA/PCo)                                      | Coaches have a modest affinity for technology. They also stated that they have a high level of self-efficacy when it comes to technology. They had a relatively high level of confidence in their abilities to use technology. Coaches also saw technology as providing them with a significant relative edge over those who did not use technology. Finally, they believed that technology was not difficult to use.                                                     |
| (Jaswal et al., 2022)     | 25 Coaches       | ATI, CSEM, and (PRA/PCo)                                 | When it comes to technology, they have a decent liking for it. They were also found to have extremely high self-efficacy and a somewhat high belief in their abilities to use technology.                                                                                                                                                                                                                                                                                 |

## **CHAPTER 3**

### **METHODS**

The aim of conducting this study was to examine Moroccan basketball coaches' method of instruction in training, technological affinity, and technology integration self-efficacy. In this section, research design, sampling, data collection instruments, data collection procedures, data analysis, and the limitations are presented in order.

#### **3.1. Research Design**

In this study, quantitative data collection and analysis methodologies (Creswell, 2009) were used to investigate the teaching methods preferences, affinity to technology and technology integration self-efficacy of Moroccan basketball coaches' by age, educational level and coaching certification level. Data from a broad sample of coaches in various age groups, educational backgrounds (lycée, undergraduate, graduate), and coaching certification categories (Mini Basket vs. Level 1-2-3 Coaching Certificates) were gathered for the study using a cross-sectional survey method. Affinity to Technology Interaction (ATI), Technology Integration Self-Efficacy (TISE), and validated scales to assess coaches' perceived use and value of teaching methods were included in a structured questionnaire. To guarantee effective data collection, the survey was distributed digitally via internet. To shed light on important areas for focused intervention and improvement within the field of Moroccan basketball coaching, the research design attempts to provide a thorough understanding of the intricate interplay between demographic factors and coaching practices.

#### **3.2. Sampling and Participants**

This study employed a stratified purposeful sampling approach to select participants and ensure representation from diverse groups within the population of Moroccan

basketball coaches with at least three years of coaching experience. Initially, authorization for data collection was obtained from the Moroccan Basketball Federation. A comprehensive list of eligible coaches was acquired, categorized by age group, educational background (lycée, undergraduate, graduate), and coaching certification level (Mini Basket vs. Level 1-2-3 Coaching Certificates). From each stratum, a random sample of coaches was selected, totaling 153 participants (Women: 24; Men: 129) who completed the internet-based survey. This sampling method allows for a more thorough investigation of the relationships between demographic factors and coaching practices within this experienced group, while also enhancing the generalizability of the findings to the broader population of Moroccan basketball coaches with similar experience levels. Participants of this study were 153 (Women: 24; Men: 129) of the 884 basketball coaches who met the experience criteria and completed the survey (Table 2).

**Table 2:** Gender distribution of the participants

| Gender | n   | %     |
|--------|-----|-------|
| Men    | 129 | 84.3  |
| Women  | 24  | 15.7  |
| Total  | 153 | 100.0 |

Distribution of coaches according to 18-24, 25-34, 35-44, 45-54-, and 55-65-years old age grouping was 8.5, 33.3, 21.6, 16.3, and 20.3% respectively (Table 3).

**Table 3:** Age distribution of the participants

| Age grouping (years) | n   | %    |
|----------------------|-----|------|
| 18 - 24              | 13  | 8.5  |
| 25 - 34              | 51  | 33.3 |
| 35 - 44              | 33  | 21.6 |
| 45 - 54              | 25  | 16.3 |
| 55 – 65              | 31  | 20.3 |
| Total                | 153 | 100  |

Participants were representing 10 different states of Morocco, with a large portion from the state of Fez-Meknes with a percentage of 37.8%. Distribution of the coaches according to the states that they reside in Morocco is presented in (Table 4).

**Table 4:** Location of the participating coaches in the survey based on their state.

| State                         | n   | %     |
|-------------------------------|-----|-------|
| Beni Mellal - Khénifra        | 1   | 0.7   |
| Casablanca - Settat           | 22  | 14.4  |
| Drâa - Tafilalet              | 16  | 10.5  |
| Fès - Meknès                  | 58  | 37.8  |
| L'Oriental                    | 11  | 7.2   |
| Laâyoune - Saguia al Hamra    | 1   | 0.7   |
| Marrakech - Safi              | 7   | 4.6   |
| Rabat - Salé - Kénitra        | 23  | 15.0  |
| Souss - Massa                 | 2   | 1.3   |
| Tanger - Tétouan - Al Hoceima | 12  | 7.8   |
| Total                         | 153 | 100.0 |

Table 5 provides a breakdown of the educational levels of Moroccan basketball coaches who participated in this study. Twenty seven coaches have completed high school, constituting 17.6% of the total sample. Seventy eight coaches, hold undergraduate degrees, representing 50.9% of the participants. Additionally, 48 coaches have attained graduate-level education, accounting for 31.3% of the total.

**Table 5:** Educational Level of the Participants

| Educational Level | n   | %     |
|-------------------|-----|-------|
| High school       | 27  | 17.6  |
| Undergraduate     | 78  | 50.9  |
| Graduate          | 48  | 31.3  |
| Total             | 153 | 100.0 |

In Morocco, basketball coaches must have a recognized coaching certificate. These certifications are Mini-Basket certification (called Young. Coach in the past), 1<sup>st</sup> degree certification, 2<sup>nd</sup> degree certification, and 3<sup>rd</sup> degree certification (highest certification). The distribution of the study participants according to the type/level of coaching certification is presented in Table 6. Coaches with Mini Basket certification was the highest represented group within the study data concerning coaching certification type/level.

**Table 6:** Coaches' basketball coaching certification level.

| Certification Level | n  | %    |
|---------------------|----|------|
| Mini basket         | 98 | 64.1 |

Table 6. (continued)

|                    |     |       |
|--------------------|-----|-------|
| Degrée 1 (Level 1) | 28  | 18.3  |
| Degrée 2 (Level 2) | 19  | 12.4  |
| Degrée 3 (Level 3) | 8   | 5.2   |
| Total              | 153 | 100.0 |

### 3.3. Data Collection Instruments

In this study, a survey including the Coaches Use of Teaching Methods Scale (Coaches Version) (Kılıç and Ince, 2023), Affinity for Technology Interaction Scale (Franke et al., 2019a), Self-efficacy in Technology Integration Scale (Perkmen, 2008), were used for data collection.

#### *Coaches Use of Teaching Methods Scale (CUTEMS-Coach)*

A translated version of the CUTEMS-Coach to French was used to examine coaches' perceived use of teaching methods (Kılıç & Ince, 2023). Original CUTEMS-Coach is adapted by Kılıç & Ince (2023) from the "Use of Teaching Styles and Perceptions of Styles Questionnaire" (Kulinna & Cothran, 2003; Ince & Hunuk, 2010). It includes 11 scenarios that are broken down into three approaches of teaching methods, namely reproductive (items 1–5; Scenarios for Teaching Styles from A to H; reproductive teaching methods), productive problem-solving (Scenarios for Teaching Styles from F to H), and productive athlete-initiated (Scenarios for Teaching Styles from I to K) (See Table 7). Coaches answered each scenario related to the assigned teaching methods/styles by answering "*I train my athletes with this method*" in a 5-point Likert scale from never to always.

CUTEMS-Coach was translated from Turkish to French firstly by a bilingual expert, then two other bilingual experts checked the correctness of the translation. After all experts approved the French version, a backtranslation to Turkish was performed. When agreements of the translators were ensured, the final version of the scale was applied to seven Moroccan basketball coaches for face validity in a pilot study. All coaches participating in the face validity study approved the clarity of the scenarios

in the CUTEMS-Coach French version. Then, the Scale was used for the data collection in this study.

**Table 7:** Teaching method scenarios for the coaches

|                                       |   |                                       |                                                                                                                                                                                                                                                                                |
|---------------------------------------|---|---------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| REPRODUCTIVE METHODS<br>(A-E)         | A | Command                               | The coach breaks down the skills into parts and demonstrates the right way to perform the skill. Athletes try to move when and exactly how the coach tells them. The coach provides feedback, and the athletes try to look like the coach's model.                             |
|                                       | B | Practice                              | The coach makes several stations in the gym where athletes work on different parts of a skill or different skills. Athletes rotate around the stations and do the tasks at their own pace. The coach moves around and helps athletes when needed.                              |
|                                       | C | Reciprocal                            | Two athletes work together on a task that the coach has designed. One athlete practice while the other athlete gives feedback to the partner. The athlete might use checklists to help them give good feedback to each other.                                                  |
|                                       | D | Self-check                            | Athletes work alone on a task and check their own work. The coach might give them a checklist so that the athletes can provide feedback to themselves while they learn the task.                                                                                               |
|                                       | E | Inclusion                             | The coach designs a learning task and there are several levels of difficulty. Athletes choose the level at which they want to work. Athletes can decide to make the task easier or harder by changing levels of the task to match their ability.                               |
| PROBLEM SOLVING<br>METHODS<br>(F-H)   | F | Guided discovery                      | The coach asks athletes to discover a solution to a movement problem. The coach asks athletes a series of specific questions and the athletes try out their answers until they discover the right answer that the coach wanted them to discover.                               |
|                                       | G | Convergent discovery                  | Athletes try to learn a skill or concept by using logical reasoning. The coach asks a question and athletes try to reason and think about different solutions. By critically thinking about the question and trying solutions, athletes can discover the single, right answer. |
|                                       | H | Divergent production                  | The coach asks athletes to solve a movement question. The athletes try to discover different movement solutions to the coach's question. There are multiple ways for the athletes to answer the question correctly.                                                            |
| ATHLETE INITIATED<br>METHODS<br>(I-K) | I | Learner's individual designed program | The coach picks the general subject matter, but the athletes make most of the decisions about the learning experience. The athletes decide what will be learned within the coach's guidelines, and then designs a personal learning program with consultation from the coach.  |
|                                       | J | Learner initiated                     | The athlete decides what will be learned as well as how it will be learned. The coach and athlete set some basic criteria, but the athlete is responsible for all the decisions about how and what to learn. The coach can help with information if the athlete needs it.      |
|                                       | K | Self-teaching                         | The athlete decides everything about learning something new. They even decide if they want to involve the coach or not. The coach accepts the athlete's decisions about learning.                                                                                              |

### *Affinity for Technology Interaction Scale (ATI)*

The ATI scale assesses people's attitudes, comfort levels, and readiness to use technology. It was originally developed and validated by (Franke et al., 2019a). The original form of ATI is in English. A validated French version of the ATI was used in this study (See <https://ati-scale.org/#section2> ; (Appendix A). The ATI scale used in this study has nine items and is scored on a 6-point Likert scale (See Table 8). The response of participants are coded on a scale of 1 to 6. Items 3, 6, and 8 necessitate reverse coding.

**Table 8:** Affinity for Technology Interaction Scale (ATI)

| Items                                                                           |
|---------------------------------------------------------------------------------|
| 1. I like to occupy myself in greater detail with technical systems.            |
| 2. I like testing the functions of new technical systems.                       |
| 3. I predominantly deal with technical systems because I must.                  |
| 4. When I have a new technical system in front of me, I try it out intensively. |
| 5. I enjoy spending time becoming acquainted with a new technical system.       |
| 6. It is enough for me that a technical system works; I don't care how or why.  |
| 7. I try to understand how a technical system exactly works.                    |
| 8. It is enough for me to know the basic functions of a technical system.       |
| 9. I try to make full use of the capabilities of a technical system.            |

Construct validity of the scale is studied and proved by (Franke et al., 2019a) Cronbach's alpha, a measure of internal consistency and reliability, was estimated to be 0.87, indicating a good level of dependability in the constructed assessment (Franke et al., 2019).

### *Technology Integration Self-Efficacy Scale (TISE)*

The TISE survey, which is accessible in Turkish, was designed and validated initially for preservice teachers by Perkmen (2008). TISE includes 16 items in a 5-point Likert format and no subscales. Items begin with "I feel confident about..." phrases and inquire about teachers' perceptions of technology integration in the classroom. The scale was adapted for coaches and translated from Turkish to French via a

translation-back-translation approach. Initially, TISE was translated from Turkish to French by a bilingual expert, then two other bilingual experts checked the correctness of the translation. After all experts approved the French version, a backtranslation to Turkish was performed. When agreements of the translators were ensured, the final version of the scale was applied to seven Moroccan basketball coaches for face validity in a pilot study. All coaches participating in the face validity study approved the clarity of TISE items. Then, the French version of the scale was used for the data collection in this study (See the French Version in Appendix B).

### **3.4. Data Collection Procedures**

Following the permission of the Middle East Technical University's Institutional Review Board from the Human Research Ethics Committee (Protocol Number: 0221-ODTUIAEK-2023; See Appendix C). In this study, initially, Moroccan Basketball Federation was contacted with an official mail to get the list of coaches and approval for collecting data (Appendix D). A digital version of the survey was prepared. After obtaining the list of coaches from the Moroccan Basketball Federation, all coaches who met the inclusion criteria of the study were invited to fill out the internet-based digital version of the survey.

### **3.5. Data Analysis**

The study's questions 1, 2, and 3 were analyzed by descriptive statistical methods, including mean, standard deviation, median, range, and percentages, where appropriate, by IBM SPSS Statistics 28 software. First, survey data was reviewed for mistakes, missing numbers, and outliers to guarantee correctness and consistency. Then, data for research question 1 was analyzed by MANOVA. Data for research question 2 and 3 were analyzed by ANOVA ( $p < 0.05$ ).

## CHAPTER 4

### RESULTS

The findings of data analysis are presented in this chapter. The findings for each study topic are provided in chronological sequence.

#### 4.1. Research Question 1

Do the basketball coaches' self-reported use and value of teaching methods (reproductive, productive problem-solving, and productive athlete-initiated) vary by coaches' age, educational level (lycée, undergraduate, graduate), and coaching certification categories (Mini Basket vs Level 1-2-3 Coaching Certificates) in Morocco?

According to MANOVA results, there was no significant difference in the perceived use of teaching methods (reproductive, productive problem-solving, and productive athlete-initiated) with respect to age  $F(12, 325) = 0.851, p = 0.598$ ; Wilk's lambda = 0.922, partial eta squared = 0.027, educational level  $F(6, 246) = 1.185, p = 0.315$ ; Wilk's lambda = 0.945, partial eta squared = 0.028, and coaching certification  $F(3, 123) = 2.526, p = 0.061$ ; Wilk's lambda = 0.942, partial eta squared = 0.058.

With respect to the given value to teaching methods by basketball coaches, MANOVA results indicated significant group differences among the age groups,  $F(12, 325) = 1.862, p = 0.038$ ; Wilk's lambda = 0.839, partial eta squared = 0.057 (Table 10). According to the further Post Hoc test, the value given to productive athlete-initiated teaching methods was higher with the coaches 18-24 and 25-34 years old as compared to the value given to this teaching method by 55-65 years old coaches (Figure 2). No other significant differences were detected between the age groups in terms of teaching methods.

There were no significant group differences in value given to teaching methods with respect to educational level  $F(6, 246) = 1.673, p = 0.128$ ; Wilk's lambda = 0.923, partial eta squared = 0.039, and coaching certificate  $F(3, 123) = 2.039, p = 0.112$ ; Wilk's lambda = 0.953, partial eta squared = 0.047.

**Table 9:** Basketball coach's use of teaching methods means (SD) scores by age groups, educational level, and a coaching certificate.

| Variable             |               |    | n           | Reproductive | Use of                     | Productive athlete-initiated | Sig. |
|----------------------|---------------|----|-------------|--------------|----------------------------|------------------------------|------|
|                      |               |    |             |              | Productive problem-solving |                              |      |
| Age<br>(Years old)   | 18-24         | 13 | 3.11(0.62)  | 3.31 (1.21)  | 2.51 (1.08)                | NS                           |      |
|                      | 25-34         | 51 | 2.98 (0.84) | 3.15 (0.93)  | 2.37 (0.99)                |                              |      |
|                      | 35-44         | 33 | 3.17 (0.81) | 3.38 (0.95)  | 2.55 (0.96)                |                              |      |
|                      | 45-54         | 25 | 3.22 (0.76) | 3.35 (0.92)  | 2.56 (0.85)                |                              |      |
|                      | 55-65         | 31 | 2.83 (0.72) | 3.01 (0.88)  | 2.08 (0.70)                |                              |      |
| Educational level    | Lycée         | 28 | 3.04 (1.03) | 3.07 (1.08)  | 2.38 (1.01)                |                              |      |
|                      | Undergraduate | 78 | 3.06 (0.76) | 3.26 (0.91)  | 2.41 (0.84)                |                              |      |
|                      | Graduate      | 47 | 3.01 (0.67) | 3.23 (0.93)  | 2.37 (1.02)                |                              |      |
| Coaching Certificate | Mini Basket   | 85 | 3.07 (0.88) | 3.22 (1.01)  | 2.53 (0.98)                |                              |      |
|                      | Level 1-2-3   | 68 | 3.00 (0.65) | 3.21 (0.87)  | 2.22 (0.83)                |                              |      |

NS: Nonsignificant group difference ( $p > 0.05$ )

**Table 10:** Mean (SD) value scores given to teaching methods by basketball coaches with respect to age groups, educational level, and coaching certificate.

| Variable             |               |    | n           | Reproductive | Value given                |                                                                    | Sig. |
|----------------------|---------------|----|-------------|--------------|----------------------------|--------------------------------------------------------------------|------|
|                      |               |    |             |              | Productive problem-solving | Productive athlete-initiated                                       |      |
| Age (years old)      | 18-24         | 13 | 3.28 (0.82) | 3.74 (0.94)  | 3.14 (0.97) *              | Value given to productive athlete initiated 18-24 and 25-35> 55-65 |      |
|                      | 25-34         | 51 | 3.30 (0.81) | 3.30 (0.82)  | 2.88 (0.90) *              |                                                                    |      |
|                      | 35-44         | 33 | 3.34 (0.81) | 3.34 (0.81)  | 2.86 (0.92)                |                                                                    |      |
|                      | 45-54         | 25 | 3.30 (0.82) | 3.30 (0.82)  | 2.80 (1.01)                |                                                                    |      |
|                      | 55-65         | 31 | 2.99 (0.76) | 2.98 /0.76)  | 2.27 (0.77) *              |                                                                    |      |
| Educational level    | Lycée         | 28 | 3.27 (1.01) | 3.30 (1.18)  | 2.83 (1.07)                |                                                                    |      |
|                      | Undergraduate | 78 | 3.26 (0.77) | 3.41 (0.88)  | 2.71 (0.82)                |                                                                    |      |
|                      | Graduate      | 47 | 3.19 (0.71) | 3.48 (0.90)  | 2.81 (1.03)                |                                                                    |      |
| Coaching Certificate | Mini Basket   | 85 | 3.30 (0.85) | 3.37 (0.88)  | 2.83 (0.91)                |                                                                    |      |
|                      | Level 1-2-3   | 68 | 3.18 (0.73) | 3.47 (0.88)  | 2.68 (0.96)                |                                                                    |      |

Significant group differences ( $p < 0.05$ )

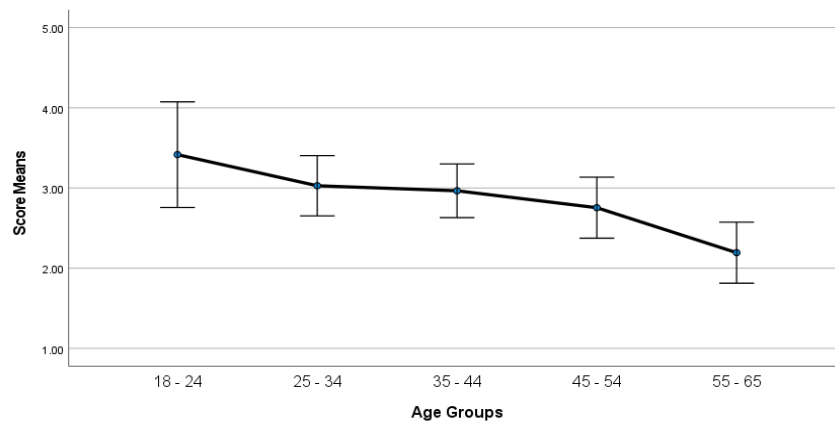


**Figure 2:** Value given to productive athlete-initiated teaching methods by basketball coaches with respect to coaches' age groups.

**Table 11.** Basketball coaches Affinity to Technology Interaction (ATI) scores by age groups, educational level, and coaching certificate

| Variable             | Group         | n  | ATI Scores Mean (SD) | Significance                     |
|----------------------|---------------|----|----------------------|----------------------------------|
| Age (years old)      | 18-24         | 13 | 4.68 (0.25)          | 18-24 > 55-65                    |
|                      | 25-34         | 51 | 4.31 (0.10)          |                                  |
|                      | 35-44         | 33 | 4.06 (0.12)          |                                  |
|                      | 45-54         | 25 | 4.44 (0.13)          |                                  |
|                      | 55-65         | 31 | 3.99 (0.10)          |                                  |
| Educational level    | Lycée         | 28 | 3.88 (0.12)          | Lycée < Undergraduate & Graduate |
|                      | Undergraduate | 78 | 4.23 (0.08)          |                                  |
|                      | Graduate      | 47 | 4.47 (0.10)          |                                  |
| Coaching Certificate | Mini Basket   | 85 | 4.23 (0.78)          | No significant difference        |
|                      | Level 1-2-3   | 68 | 4.26 (0.08)          |                                  |

Significant group differences ( $p < 0.05$ )

## 4.2. Research Question 2

Do the basketball coaches' Affinity to Technology Interaction (ATI) scores vary by coaches' age, educational level (lycée, undergraduate, graduate), and coaching certificate categories (Mini Basket vs Level 1-2-3 Coaching Certificates) in Morocco?

According to the ANOVA results, there were significant ATI score differences among the age groups of the basketball coaches  $F(4, 152) = 3.79, p = 0.006$  (Table 11). Further Post Hoc tests indicated that 18-24-year-old basketball coaches' mean

ATI scores were significantly higher than the 55-65-year-old group's ( $p<0.05$ ). There were no significant differences among the other age groups ( $p>0.05$ ) (Figure 3).

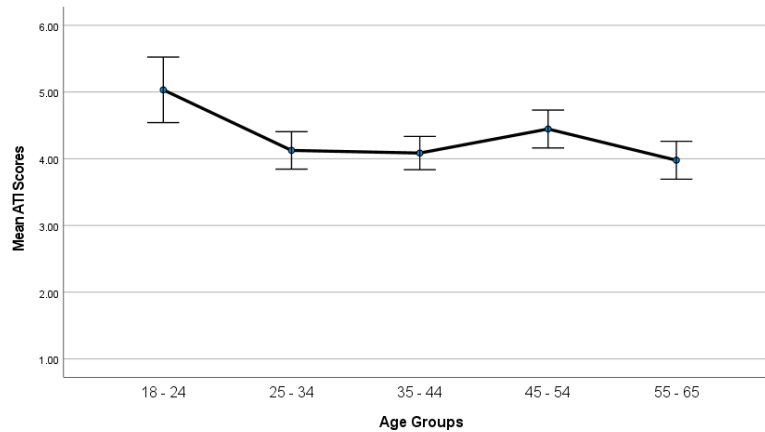


**Figure 3:** Basketball coaches Affinity to Technology Interaction (ATI) mean scores by age groups.

According to the ANOVA results, there were significant ATI score differences among the educational levels of the basketball coaches  $F(2, 152) = 4.59, p=0.012$ . Further Post Hoc tests indicated basketball coaches with lycée education had significantly lower ATI scores than those with undergraduate and graduate degrees ( $p<0.05$ ). There were no significant differences between the ATI scores of basketball coaches with undergraduate and graduate education ( $p>0.05$ ) (Figure 4).

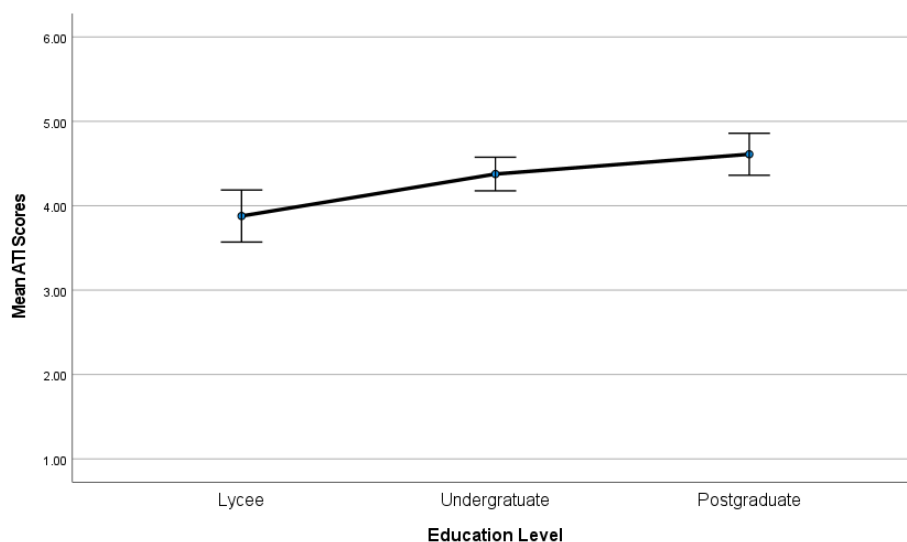


**Figure 4:** Basketball coaches' Affinity to Technology Interaction (ATI) mean scores by educational level.

According to the ANOVA results, there were no significant ATI score differences between the basketball coaches with Mini Basket and Level 1-2-3 coaching certificates  $F(1, 152) = 0.01, p=0.971 (p>0.05)$ . (Figure 5).

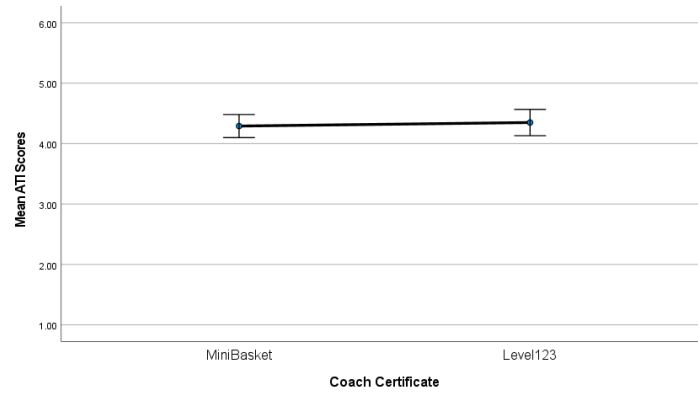


**Figure 5:** Basketball coaches' Affinity to Technology Interaction (ATI) mean scores by coaching certificates.

### 4.3. Research Question 3

Do the basketball coaches' Technology Integration Self-Efficacy (TISE) scores vary by coaches' age, educational level (lycée, undergraduate, graduate), and coaching certificate categories (Mini Basket vs Level 1-2-3 Coaching Certificates) in Morocco?

According to the ANOVA results, there were no significant TISE score differences among the age groups of the basketball coaches  $F(4, 152) = 1.39, p=0.184 (p>0.05)$  (Figure 6) (Table 12).

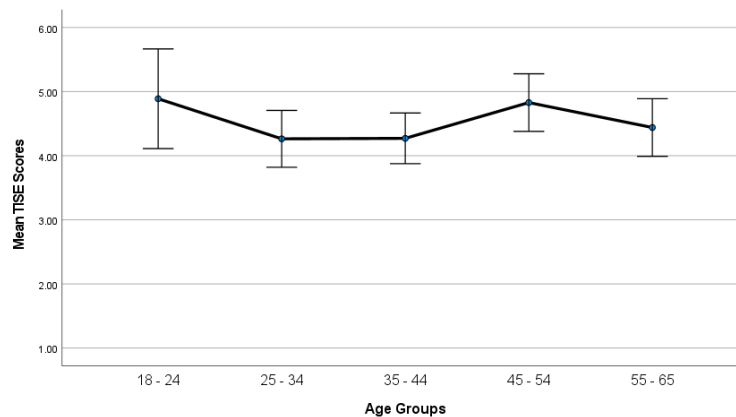


**Figure 6:** Basketball coaches Technology Integration Self Efficacy (TISE) mean scores by age groups.

**Table 12:** Basketball coaches' Technology Integration Self-Efficacy (TISE) scores by age groups, educational level, and coaching certificate

| Variable             | Group         | n  | TISE Scores<br>Mean (SD) | Significance                     |
|----------------------|---------------|----|--------------------------|----------------------------------|
| Age (years old)      | 18-24         | 13 | 4.81 (0.82)              | No significant difference        |
|                      | 25-34         | 51 | 4.69 (1.18)              |                                  |
|                      | 35-44         | 33 | 4.33 (1.25)              |                                  |
|                      | 45-54         | 25 | 4.78 (0.81)              |                                  |
|                      | 55-65         | 31 | 4.48 (0.92)              |                                  |
| Educational level    | Lycée         | 28 | 4.42 (1.32)              | Lycée < Undergraduate & Graduate |
|                      | Undergraduate | 78 | 4.57 (1.01)              |                                  |
|                      | Graduate      | 47 | 4.73 (0.99)              |                                  |
| Coaching Certificate | Mini Basket   | 85 | 4.51 (1.16)              | No significant difference        |
|                      | Level 1-2-3   | 68 | 4.70 (1.07)              |                                  |

Significant group differences ( $p < 0.05$ )

According to the ANOVA results, there were significant TISE score differences among the educational levels of the basketball coaches  $F(2, 152) = 3.62, p = 0.030$  (Table 12). Further Post Hoc test indicated basketball coaches with lycée education had significantly lower TISE scores than those with undergraduate and graduate degrees ( $p < 0.05$ ). There were no significant differences between the TISE scores of basketball coaches with undergraduate and graduate education ( $p > 0.05$ ) (Figure 7).

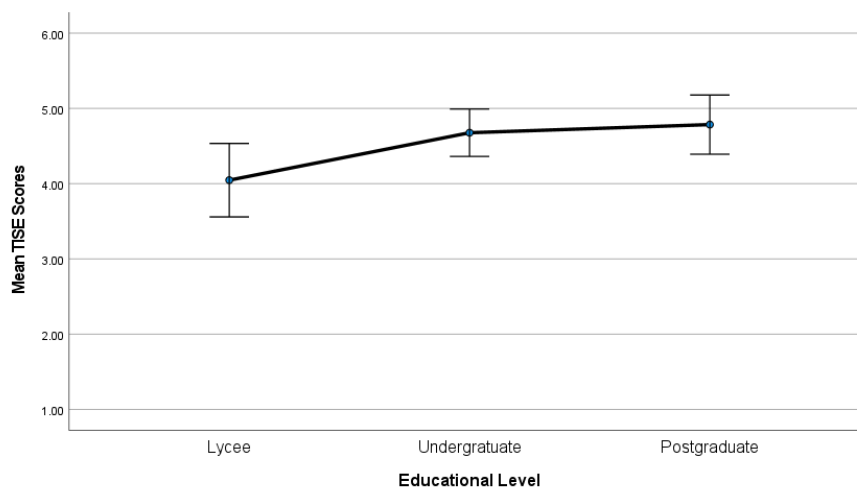


**Figure 7:** Basketball coaches' Technology Integration Self Efficacy (TISE) mean scores by educational level.

According to the ANOVA results, there were no significant TISE score differences between the basketball coaches with Mini Basket and Level 1-2-3 coaching certificates  $F(1, 152) = 1.172, p = 0.281 (p > 0.05)$  (Figure 8).

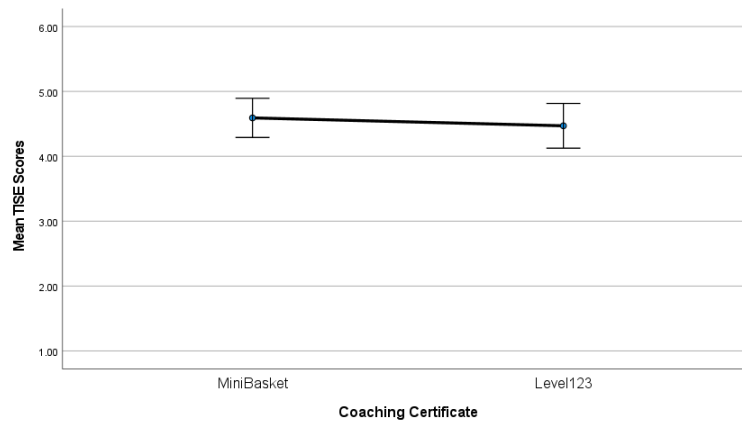


**Figure 8:** Basketball coaches' Technology Integration Self Efficacy (TISE) mean scores by coaching certificates.

## **CHAPTER 5**

### **DISCUSSION**

This study investigates the teaching methods, coaches affinity to technology interaction and technology integration self-efficacy in Moroccan basketball coaching, posing key questions about how age, educational background, and certification influence coaches' methodological and technological preferences. Analysis, guided by the research questions, yields nuanced insights on pedagogical consistency, a preference for athlete-initiated teaching approaches among younger coaches, and varying technology engagement across demographic profiles. This discussion aims to contextualize these findings within the larger scholarly discourse, analyzing their implications for coaching techniques and education.

#### **5.1. Interpretation of Results**

Regarding the first research question, “Do the basketball coaches' self-reported use and value of teaching methods (reproductive, productive problem-solving, and productive athlete-initiated) vary by coaches' age, educational level (lycée, undergraduate, graduate), and coaching certification categories (Mini Basket vs Level 1-2-3 Coaching Certificates) in Morocco?”, based on the findings, it can be stated that coaches use reproductive and problem solving teaching methods more than the productive athlete-initiated methods regardless of their age, educational level and coaching certificate level. However, younger coaches (18-34 years old) value productive athlete-initiated teaching methods more than the older age coaches (55-65 years old). Value given to teaching methods by the coaches did not vary by coaches educational and coaching certificate level.

Coaches dominant use of reproductive teaching methods and less use of athlete-initiated methods in their professional practice found in the current study is in line

with the previous research in the literature. Previously, Kılıç and Ince (2023) indicated coaches frequent use of reproductive teaching methods and rare use of athlete-initiated methods in Turkish context in a group of youth sport coaches from various sports. Even though there are many textbooks on coach education recommending the use of athlete-centered productive methods (Pill et al., 2021; Mitchell et al., 2020; Cassidy et al., 2008), except Kılıç and Ince (2023), there is no study examining the coaches use of teaching methods. However, there are plenty of studies about physical education teachers use of teaching methods, and these studies also indicate the teachers' frequent use of teacher-centered and rare use of learner-centered teaching methods in their practice (Parsak and Saraç, 2020; İnce and Hünük, 2010; Curtner-Smith et.al., 2001; Cothran et al., 2005; Kulinna and Cothran, 2003). In this respect, by the findings of current study, it can be said that basketball coaches use of teaching methods in Morocco are similar with the previous studies in the literature.

Studies examining the value given to productive athlete-initiated teaching methods by coaches and physical education teachers also indicate less value given to this approach by the coaches and teachers in sport setting (Kılıç and İnce, 2023; İnce and Hünük, 2010). Current study findings in basketball coaches in Morocco are in line with those previous studies. However, this study also extended the literature by indicating younger coaches valuing the productive athlete-initiated methods more than the older coaches in Morocco basketball. This finding in Morocco basketball coaches might be linked to generational shift toward more athlete-centered coaching philosophies.

Based on the findings of this research question in Morocco basketball coaches, it is clear that coaches pedagogical content knowledge on the autonomy supportive athlete-centered teaching methods is limited. This situation would possibly negatively affect their players development in sport specific competency and psychosocial development where higher order learning is targeted (Kılıç and Ince, 2023; Mitchell et al., 2020; Cassidy et al., 2008). Kılıç and Ince (2023) underlines that *“Athlete’s superficial learning in these developmental areas may not be sufficient to realize the current training aims and improve sports performance significantly.”*

Low value given to autonomy supporting productive athlete-initiated teaching methods by the basketball coaches should also be considered critically. It means that those coaches would possibly be hesitant to use these methods in their professional practice even they are encouraged to use them. Therefore, coach professional development programs should be prepared carefully to target changing the value perceptions with best practice examples of these methods during the professional practice. Moreover, higher value given to athlete-initiated methods by the younger coaches as compared the older ones could be an indicator of possible toward the athlete-centered autonomy supportive teaching methods as new generations enter the coaching profession. The root of the younger coaches valuing these methods should be examined thorough the changes in general education practices in schools and their experiences in life as compared to the older coaches. Even younger coaches value these methods in practice, it should not be forgotten that these coaches use athlete-initiated methods rarely in their coaching similar to the older age coaches. Coach education programs for the younger generation of coaches must consider this situation too.

Overall, with respect to coaches use and value of teaching methods, current study extended the literature by exploring the situation in Morocco Basketball Coaching setting. Moreover, this study first to explain the teaching method use and value of coaches by age groups, educational status and coaching certificate level in the literature.

Considering the second research question, “Do the Moroccan basketball coaches' Affinity to Technology Interaction (ATI) scores vary by coaches' age, educational level (lycée, undergraduate, graduate), and coaching certificate categories (Mini Basket vs Level 1-2-3 Coaching Certificates)?”, analyzes indicated the proclivity of younger coaches to use technology tools in their coaching, as compared to their older counterpart. Findings also indicated lower affinity to technology interaction by coaches with lycée degree as compared to coaches with undergraduate and graduate level educational degree. However, coaches' level of coaching certification does not affect Affinity to Technology Interaction.

Affinity to technology interaction indicates individual's proclivity to interact with technical tools and systems, representing the various levels of comfort and motivation that people display while using technology. Recently Henrich et al. (2022) and Bush et al. (2022) have reported affinity to technology interaction of professionals from educational and health sectors. Henrich et al (2022) have found a link between teachers' ATI and their use of digital tools in pedagogical processes, implying that higher ATI levels among teachers are associated with more effective technology use in education. Bush et al. (2022) reported that healthcare professionals with high ATI levels are more likely to use electronic health records and telehealth services, which improves patient care and operational efficiency. In the sports setting, Coaches with higher ATIs are more likely to use new technology into their professional practice (Franke et al., 2019). Frankie et al. (2019) reports a 3.5/6.0 point average score in general population. In the current study, average ATI score were changing from 3.99 to 4.68 among age groups, from 3.88 to 4.47 among educational levels, and from 4.23 to 4.26 between coaching certificate groups. Considering the general population averages reported in Frankie et al. (2019), it can be stated that basketball coaches in Morocco have higher affinity to technology interaction as compared to the general population averages from other cultures. To author's knowledge there is no study exploring the ATI of coaches in the literature previously. This is the first study examining ATI of coaches. Previously, Frankie et al. (2019) report no or low association of ATI score by age and educational level. In the current study, contrary to Frankie et al. (2019), a significant difference between younger (18-24 years old) and older (55-65 years old) coaches in favor of younger ones, and between educational level between lycée and undergraduate-graduate education level in favor of undergraduate-graduate educational level were found. This finding is consistent with the wider narrative in technology adoption literature, which shows that younger people have better levels of digital literacy and are more willing to incorporate technology into their professional activities (Mertala et al, 2024; Prensky, 2001). The higher ATI scores among younger coaches highlight the importance of targeted educational programs to bridge the digital gap, ensuring that all coaches, regardless of age, are similarly prepared to use technology in coaching. In general, in relation to coaches' affinity to technology interaction, the current study extends the literature by providing evidence on ATI of coaches in the Moroccan

basketball setting by inquiring about their age, level of education, and level of coaching certification. However, it should be noted that while the importance of ATI in professional contexts is well established, with greater ATI being associated with favorable results in technology use, the particular implications of ATI for sports coaches and their technological integration techniques remain an area open for research. Unraveling these processes might unravel the way for new coaching approaches and enhanced athlete performance, representing a huge step forward in the intersection of technology and sport coaching. With regard to the third and the last research question, “Do the Moroccan basketball coaches' Technology Integration Self-Efficacy (TISE) scores vary by coaches' age, educational level (lycée, undergraduate, graduate), and coaching certificate categories (Mini Basket vs Level 1-2-3 Coaching Certificates)?”, the findings revealed that coaches' technology integration self-efficacy varies by educational level. However, no significant difference was found for age and coaching certificate for technology integration self-efficacy. Coaches with more formal education expressed increased confidence in integrating technology, indicating that educational experiences beyond core coaching education are critical in establishing technical self-efficacy. This emphasizes the need of incorporating technology training into coaching education programs to help coaches gain confidence and capability in using technological tools. In the literature, there are plenty of research indicating the technology integration self-efficacy of professionals from education sectors, specifically teachers (Zeng, Wang, Li, 2022; Gomez et al. 2021; Perkmen, 2008, Semiz and Ince, 2012). These studies indicate that teachers with higher technology integration self-efficacy have higher technological pedagogical content knowledge. It means, those teachers have a potential to effectively integrate technology into professional practice. Interestingly, there is limited knowledge on the coaches technology integration self-efficacy, and technology integration in literature, even though there are many studies underlying the importance of coaches' effective use of technology for athlete learning (Wells et al., 2023; Cushion & Townsend, 2019; Dray & Howells, 2019). In one of the studies with experienced coaches' attitudes towards science and technology, Liebermann, Katz and Sorrentino (2005) noted that even coaches seem to recognize the general importance of using sport technologies, they do not necessarily translate the positive attitudes into their professional practice. Recently, Maers, Phillips, and Sumner

(2020) have examined the perceived effectiveness of digital technology for elite athlete in Golf case concluded predominantly positive views of the coaches, athletes and support personnel with regards to the use of technology for analysing athlete performance. Overall, for this research question, current study extended the literature on the topic by presenting evidence about the technology integration self-efficacy of basketball coaches in Morocco. Specifically, the study underlined the importance of attaining higher educational level of coaches in increasing the technology integration self-efficacy.

## **5.2. Limitations**

This research, which focuses on coaching pedagogy and technological integration in Moroccan basketball, recognizes various limitations due to its approach and scope. Despite the efforts to ensure a diverse sample of experienced coaches, this study's sampling approach acknowledges certain limitations. The selection of participants with a minimum of three years of experience, while necessary to address the research questions, restricts the generalizability of the findings to the broader population of Moroccan basketball coaches, potentially excluding valuable insights from newer coaches. Additionally, the chosen sampling method, while employing stratification, retains the inherent subjectivity of purposeful selection, which could introduce researcher bias and limit the replicability of the study. Furthermore, the reliance on self-reported data through questionnaires introduces the possibility of social desirability bias, potentially influencing the accuracy of responses regarding teaching methods, technology affinity, and self-efficacy. The study's focus on Moroccan basketball coaches also limits the cross-cultural applicability of the findings, highlighting the need for comparative research across diverse contexts to gain a more comprehensive understanding of coaching practices internationally. Moreover, the inclusion of coaches with varying educational backgrounds, including those with only a high school academic level, may introduce additional variability in technological affinity and self-efficacy, potentially influencing the interpretation of the results. Finally, the cross-sectional design and relatively short timeframe of the study prevent the examination of potential changes in coaching approaches over time and the establishment of causal relationships. Future research could explore

alternative sampling strategies, incorporate objective measures alongside self-reported data, investigate coaching practices in different cultural settings, and employ longitudinal or experimental designs to address these limitations and provide a more nuanced understanding of coaching pedagogy and technology integration in basketball and beyond.

### **5.3. Recommendations for Implementation and Future Research**

The findings of this study on coaching pedagogy and technology integration in Moroccan basketball coaching provide useful insights in the field of sports coaching. They emphasize the significance of upgrading coaching education to suit the demands of current sporting situations, with a focus on the teaching methods and integration of technology. Based on the findings, following recommendations were stated:

#### *Design, Implement and Evaluate the Continuing Professional Development Programs based on the Coaches Needs*

There is a need for encouraging coaches for continuing learning and adaptation among coaches specifically in developing autonomy supportive athlete-centered teaching methods, and technology integration into the professional practice. Continuing professional development programs prepared for the coaches (e.g., workshops, seminars, formal coach education programs) should consider the age, educational level and coaching certificate level specific needs in athlete-centered pedagogical content knowledge. Effectiveness of these continuing professional development programs should be studied for the target groups.

#### *Integration of Technology into Formal Coaching Curriculum*

Coaching education programs should include more technology-focused courses to fulfill the acknowledged demand for increased technical skills among coaches, particularly those over the age of 50 or with minimum educational credentials. This effort would guarantee that all coaches, regardless of age or educational background, has the essential abilities to properly use technology in their coaching activities. Practical applications might include leveraging software for performance analysis,

digital platforms for training sessions, and social media for team communication, therefore integrating these tools into the coaching curriculum. Effectiveness of integration of technology into formal coaching curriculum for the professional development of coaches should be examined in future studies.

#### *Customized Training Programs*

Creating age and education-specific training programs would help learning of coaches. This strategy recognizes each demographic's individual difficulties and capabilities, providing personalized information to enhance learning efficiency. For example, interactive workshops and online courses may be built with varied levels of technological sophistication to ensure that all coaches can access and benefit from them.

#### *Mentorship Programs*

Mentorship programs, in which younger, tech-savvy coaches help older coaches adapt new technology and teaching approaches, serve as a bridge between generations in the coaching community. This peer-to-peer learning paradigm promotes collaboration, information transfer, and the implementation of novel coaching tactics across all age groups.

#### *Technology-Enhanced Athlete Engagement*

Training coaches to use technology not just for professional growth, but also to actively engage athletes in the learning process, is critical. Wearable gadgets, smartphone applications, and video analysis tools may help athletes participate and provide feedback, making the learning process more dynamic and individualized.

#### *Research and Development*

Investing in further research is critical for constantly updating and improving coaching methods, as well as incorporating technology into sports coaching. Future research could build on the findings of this study by investigating the long-term consequences of technology-integrated coaching programs, their impact on athlete performance, and the hurdles to technology adoption among coaches.

### *Collaboration with Educational Institutions*

Collaboration with the Education and Sport ministry, Moroccan Olympic Committee, and the Basketball Federation to create personalized courses and programs for coaches, concentrating on both teaching approaches and technology competency, has the potential to improve coaching education. These collaborations may promote the establishment of approved programs that provide both theoretical knowledge and practical skills, ensuring that coaches are well-prepared to face the demands of modern sports coaching.

### **5.4. Conclusion**

This study thoroughly explored the dynamics of coaching pedagogy and technology integration in Moroccan basketball coaching, giving critical insights into the variations and consistency in coaching methods across age groups and educational levels. Key findings show a significant generational affinity for athlete-initiated teaching methods among younger coaches, as well as a significant correlation between coaches' educational levels and their self-efficacy in technology integration, emphasizing the complex interplay between age, education, and technological adaptability in sports coaching. Despite the lack of significant differences in the use of teaching methods across age groups, younger coaches' increased willingness to embrace technology-enhanced coaching strategies suggests a gradual shift toward more participatory and technologically integrated coaching environments. This study adds to the greater discussion on sports coaching by emphasizing the importance of specialized educational programs that serve the different requirements of coaches, as well as establishing an ecosystem that promotes continuous learning and adaptability to technological progress. The findings call for a strategic realignment of coaching education to better equip coaches with the skills needed to navigate the changing landscape of modern sports coaching, thereby improving coaching practices and promoting athlete development in a technologically advanced world.

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## APPENDICES

### A. AFFINITY FOR TECHNOLOGY INTERACTION SCALE (ATI)

Please indicate how confident you are for each statement below.

| I strongly disagree | I do not agree | I'm undecided | I agree | Absolutely I agree. |
|---------------------|----------------|---------------|---------|---------------------|
| 1                   | 2              | 3             | 4       | 5                   |

- 1- I like to occupy myself in greater detail with technical systems.
- 2- I like testing the functions of new technical systems.
- 3- I predominantly deal with technical systems because I must.
- 4- When I have a new technical system in front of me, I try it out intensively.
- 5- I enjoy spending time becoming acquainted with a new technical system.
- 6- It is enough for me that a technical system works; I don't care how or why.
- 7- I try to understand how a technical system exactly works.
- 8- It is enough for me to know the basic functions of a technical system.
- 9- I try to make full use of the capabilities of a technical system.

#### ATI - French Version

Veuillez indiquer votre degré de confiance pour chaque affirmation ci-dessous.

Je ne suis pas du tout d'accord - Je ne suis pas d'accord - Je suis indécis - Je suis d'accord - Tout à fait d'accord.

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
|---|---|---|---|---|

- 1- J'aime m'occuper plus en détail des systèmes techniques.
- 2- J'aime tester les fonctionnalités de nouveaux systèmes techniques.
- 3- Je m'occupe principalement de systèmes techniques parce que je le dois.
- 4- Quand j'ai un nouveau système technique devant moi, je l'essaye intensivement.
- 5- J'aime passer du temps à me familiariser avec un nouveau système technique.
- 6- Il me suffit qu'un système technique fonctionne ; Je me fiche du comment ou du pourquoi.
- 7- J'essaie de comprendre comment fonctionne exactement un système technique.
- 8- Il me suffit de connaître les fonctions de base d'un système technique.
- 9- J'essaie d'utiliser pleinement les capacités d'un système technique.

## B. TECHNOLOGICAL INTEGRATION SELF-EFFICACY SCALE (TISE)

Please indicate how confident you are for each statement below.

|                     |                |               |         |                     |
|---------------------|----------------|---------------|---------|---------------------|
| I strongly disagree | I do not agree | I'm undecided | I agree | Absolutely I agree. |
| 1                   | 2              | 3             | 4       | 5                   |

- 1- I am confident that I understand the capabilities of technology well enough to maximize its use in my basketball training.
- 2- I am confident that I have the skills to use technology for coaching strategies and game analysis.
- 3- I am confident that I can successfully coach relevant basketball skills and strategies with the appropriate use of technology.
- 4- I feel confident in my ability to evaluate basketball coaching software and tools for effective use.
- 5- I am confident that I can use correct basketball and technology terminology when directing players' use of technology.
- 6- I am confident that I can help players when they have difficulty with the technological tools used for basketball training.
- 7- I am confident that I can effectively monitor players' use of technology for game analysis and skill development in my coaching.
- 8- I am confident that I can motivate players to participate in technology-based training and game analysis.
- 9- I am confident in coaching players in the appropriate use of technology for basketball training.
- 10- I am confident that I can consistently use technology effectively to improve player performance.
- 11- I am confident in providing individual feedback to players when using technology for basketball training.
- 12- I feel confident that I can regularly integrate technology into my training sessions when appropriate for player learning.
- 13- I am confident in choosing the appropriate technology for basketball training based on team goals and performance needs.
- 14- I feel confident assigning, grading practice projects, and analyzing technology-based basketball games.

15- I am confident that I can meet the needs of players when using technology for basketball training.

16- I feel confident in using technology resources (such as video analysis tools, performance tracking software, etc.) to collect and analyze player performance data to improve playing practices. Training.

### TISE - French Version

Je ne suis pas du tout d'accord - Je ne suis pas d'accord - Je suis indécis - Je suis d'accord - Tout à fait d'accord.  
1 2 3 4 5

- 1- Je suis convaincu de comprendre suffisamment bien les capacités de la technologie pour maximiser son utilisation dans mon entraînement de basket-ball.
- 2- Je suis convaincu d'avoir les compétences nécessaires pour utiliser la technologie pour les stratégies de coaching et l'analyse des matchs.
- 3- Je suis convaincu que je peux entraîner avec succès des compétences et des stratégies pertinentes en matière de basket-ball grâce à une utilisation appropriée de la technologie.
- 4- J'ai confiance en ma capacité à évaluer les logiciels et outils de coaching de basket-ball pour une utilisation efficace.
- 5- Je suis convaincu que je peux utiliser la terminologie correcte du basket-ball et de la technologie lorsque j'oriente l'utilisation de la technologie par les joueurs.
- 6- Je suis convaincu de pouvoir aider les joueurs lorsqu'ils éprouvent des difficultés avec les outils technologiques utilisés pour l'entraînement de basket-ball.
- 7- Je suis convaincu que je peux surveiller efficacement l'utilisation de la technologie par les joueurs pour l'analyse du jeu et le développement des compétences dans mon entraînement.
- 8- Je suis convaincu que je peux motiver les joueurs à participer à une formation et à une analyse de jeu basées sur la technologie.
- 9- Je suis confiant dans l'entraînement des joueurs dans l'utilisation appropriée de la technologie pour l'entraînement de basket-ball.
- 10- Je suis convaincu que je peux utiliser systématiquement et efficacement la technologie pour améliorer les performances des joueurs.
- 11- Je suis confiant dans ma capacité à fournir des commentaires individuels aux joueurs lors de l'utilisation de la technologie pour l'entraînement de basket-ball.
- 12- Je suis convaincu de pouvoir intégrer régulièrement la technologie dans mes séances d'entraînement lorsque cela est approprié pour l'apprentissage des joueurs.
- 13- Je suis confiant dans le choix de la technologie appropriée pour l'entraînement de basket-ball en fonction des objectifs de l'équipe et des besoins de performance.

- 14- Je me sens en confiance pour attribuer, noter des projets d'entraînement et analyser des matchs de basket-ball basés sur la technologie.
- 15- Je suis convaincu de pouvoir répondre aux besoins des joueurs en utilisant la technologie pour l'entraînement de basket-ball.
- 16- Je me sens en confiance pour utiliser les ressources technologiques (telles que les outils d'analyse vidéo, les logiciels de suivi des performances, etc.) pour collecter et analyser les données de performance des joueurs afin d'améliorer les pratiques de jeu. Entraînement.



## C. APPROVAL OF METU HUMAN SUBJECTS ETHICS COMMITTEE

UYGULAMALI ETİK ARAŞTIRMA MERKEZİ  
APPLIED ETHICS RESEARCH CENTER



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15 MAYIS 2023

Konu: Değerlendirme Sonucu

Gönderen: ODTÜ İnsan Araştırmaları Etik Kurulu (İAEK)

İlgi: İnsan Araştırmaları Etik Kurulu Başvurusu

Sayın Mustafa Levent İNCE

Danışmanlığını yürüttüğünüz Mohammed Amine Azzouzi'nin "*Fastı Basketbol Antrenörlerinin Teknolojiye İlgisi, Teknoloji Entegrasyonu Özyeterliği ve Öğretim Yöntemleri Kullanımı*" başlıklı araştırmanız İnsan Araştırmaları Etik Kurulu tarafından uygun görülerek 0221-ODTÜİAEK-2023 protokol numarası ile onaylanmıştır.

Bilgilerinize saygılarımla sunarım.

Prof. Dr. Ş. Halil TURAN  
Başkan

Prof.Dr. İ. Semih AKÇOMAK  
Üye

Doç. Dr. Ali Emre Turgut  
Üye

Doç. Dr. Şerife SEVİNÇ  
Üye

Dr. Öğretim Üyesi Murat Perit ÇAKIR  
Üye

Dr. Öğretim Üyesi Süreyya ÖZCAN KABASAKAL  
Üye

Dr. Öğretim Üyesi Müge GÜNDÜZ  
Üye

## D. AUTHORIZATION OF THE MOROCCAN BASKETBALL FEDERATION

**Fédération Royale Marocaine  
de Basketball**



الجامعة الملكية المغربية  
لكرة السلة

**Objet : Autorisation de collecte de données du Basketball National.**

Monsieur,

Suite à votre lettre de demande de collecte de données du 15 Juin 2023 adressée à la Fédération Royale Marocaine de Basketball, nous tenons à vous féliciter du projet que vous soutenez en qualité d'étudiant-chercheur au programme de Maîtrise (Master) en Sciences d'Éducation Physiques et Sportive à l'Université Middle East Technical University, qui va dans le sens du Développement du Basketball National.

La Fédération Royale Marocaine de Basketball n'a donc aucune objection à ce que vous collectiez les données nécessaires pour votre travail de recherche dans le cadre de votre programme de maîtrise, auprès des différents acteurs administratifs et techniques de la FRMBB présents au Siège de la Fédération où dans les différents centres techniques,

Nous nous ferons un plaisir de vous aider à collecter les datas auprès des entraîneurs de Basketball Marocains qui convienne à vos besoins.

**Je vous prie d'agréer, Monsieur, mes salutations les meilleures.**

## E. TURKISH SUMMARY / TRKE ZET

### Giriř

Antrenrlerin pedagojik yeterlikleri ve sporcu geliřimindeki rolleri giderek daha fazla nem kazanmaktadır. Etkili antrenrlk, antrenrlk baėlamının amacına ulařma durumu ile tanımlanır (Ct & Gilbert, 2009). Gncel arařtırmalar, etkili antrenrlk ve bařarılı bir kariyer iin antrenrn pedagojik alan bilgisinin nemini vurgulamaktadır. Arařtırmacılara gre, antrenrler ėrenme ve ėretme srelerini iyi anlamalı, sporcularla etkili iletiřim ve baė kurabilmelidirler (Jones & Kingston, 2013), Pedagojik alan bilgisi yksek olan antrenrler, ėrenmeyi ve beceri kazanımını teřvik eden eėitim ortamını planlayabilir, uygulayabilir, gl bir lme ve deėerlendirme yaklařımı ile sporcularına ve diėer paydařlara anlamlı geri bildirim saėlayabilir. Bunun yanında Goffena & Horn (2021), antrenr-sporcu iliřkilerinin geliřmesinde sporcuyu zerkleřtiren sporcu merkezli pedagojilerin uygulanmasının nemini vurgulamaktadır. Sporcu merkezli pedagojiler, sporcuları kendi geliřimlerinde aktif katılımcılar olarak grmeye odaklanır. Bu yaklařım, sporcularda zerklik, karar verme yetenekleri ve isel motivasyonu teřvik ederek, performansın ve sporlara uzun vadeli katılımın artmasına yol aar. Yakın zamandaki iletiřim, eėitim ve spor teknolojilerindeki geliřmeler antrenrlk baėlamını da gl bir řekilde etkilemektedir. Antrenrlerin bu teknolojileri sporcularının daha iyi ėrenmesini saėlama yanında sporculardaki performans geliřimleri takip etmede de etkili bir řekilde kullanması beklenmektedir. Bu nedenlerle antrenrler iletiřim, eėitim ve spor teknolojilerini antrenmalarına entegre edebilmeli ve bundan sporcu ėrenmesi aısında yarar saėlamalıdır. Antrenrlerin bunu saėlayabilmeleri ise ilgili teknolojilere yakın olmaları ve bunları kullanma z yeterliklerinin yksek olması ile mmkndr.

Bununla birlikte, literatrde antrenrlerin ėretim yntemleri kullanımı, teknolojiye yakınlıkları ve teknoloji kullanımı z yeterlikleri konularında sınırlı bilgi vardır (Kılı ve İnce, 2023). Antrenrlerin yařı, eėitim dzeyleri ve antrenrlk sertifikası

düzeylerinin öğretim yöntemleri kullanımı, teknolojiye yakınlığı ve teknoloji kullanımı öz yeterliklerini nasıl etkilediği ise tam olarak bilinmemektedir. Fas basketbol antrenörlüğü bağlamında ise bu konularda yapılmış bir çalışmaya rastlanmamıştır.

### **Çalışma amacı**

Bu çalışmanın temel amacı, Fas'taki basketbol antrenörlerinin yaşlarının, öğrenim ve antrenörlük sertifika düzeylerinin, öğretim yöntemleri kullanımı, teknoloji etkileşimine yakınlıkları ve teknoloji entegrasyonu öz-yeterlilikleri üzerindeki etkilerini incelemektir. Bu bağlamda, koçların yaş grupları, eğitim düzeyleri (lise, lisans, lisansüstü) ve koçluk sertifikası kategorileri (Mini Basket, 1-2-3 Kademe Antrenörlük Sertifikaları) arasındaki farklılıkların ortaya konması ve her alt grubun ihtiyaçlarına göre özelleştirilmiş mesleki gelişim programları tasarlanması için gerekli bilgilerin sağlanması amaçlanmıştır.

### **Araştırma soruları:**

1. Fas'taki basketbol antrenörlerin rapor ettikleri öğretim yöntemleri (reprodüksiyon, üretken problem çözme ve sporcu başlangıçlı) kullanımları ve bunlara verdikleri değer, antrenörlerin yaşına, eğitim seviyesine (lise, lisans, lisansüstü) ve antrenörlük sertifika kategorilerine (Mini Basket, Seviye 1-2-3. Kademe Antrenörlük Sertifikaları) göre değişiklik gösterir mi?
2. Fas'taki basketbol antrenörlerinin Teknoloji Etkileşimine Yakınlık (ATI) puanları, antrenörlerin yaşına, eğitim seviyesine (lise, lisans, lisansüstü) ve koçluk sertifika kategorilerine (Mini Basket, Seviye 1-2-3. Kademe Antrenörlük) göre değişiklik gösterir mi?
3. Fas'taki basketbol antrenörlerinin Teknoloji Entegrasyonu Öz-Yeterlilik (TISE) puanları, antrenörlerin yaşına, eğitim seviyesine (lise, lisans, lisansüstü) ve koçluk sertifika kategorilerine (Mini Basket, Seviye 1-2-3. Kademe Antrenörlük) göre değişiklik gösterir mi??

### **Çalışmanın önemi**

Bu araştırma, Fas'taki basketbol antrenörlerinin sporcu merkezli öğretim yaklaşımları, teknolojiye olan yakınlıkları ve teknoloji entegrasyonu konularındaki öz-yeterliliklerini inceleyerek, antrenörlük niteliğini geliştirmek için gerekli alanları ortaya koymayı hedeflemektedir. Antrenörlerin demografik özelliklerinin, öğretim yöntemleri, teknolojik etkileşimler ve teknoloji entegrasyonu öz-yeterliliği üzerindeki etkisini anlayarak, Fas basketbolunda sporcu öğrenmesin geliştirilmesinde dikkat edilmesi gereken unsurlar ortaya konacaktır. Araştırma bulguları, ihtiyaç temelli antrenör mesleki gelişim programları geliştirilmesine katkı yapacaktır.

### **Yöntem**

#### **Araştırma Tasarımı**

Çalışma anketle tarama yaklaşımı kullanılarak yapılmıştır. Çalışma kurgusunda çeşitli yaş gruplarından, eğitim ve antrenörlük sertifikasyon düzeylerinden Fas'ta görev yapan mümkün olduğunca geniş bir antrenör örneklemine ulaşmak hedeflenmiştir.

#### **Örneklem**

Amaçlı örnekleme yaklaşımı kullanılarak, en az üç yıl antrenörlük deneyimi olan Fas'ta çalışan basketbol antrenörleri çalışmaya dahil edilmiştir. Fas Basketbol Federasyonu'ndan veri toplama izni alındıktan sonra, 884 anternöre çalışma ile ilgili bilgi verilmiş ve veri toplama aracı (anket paketi) internet üzerinden dijital formatta erişimlerine açılmıştır. Fas'ın 10 farklı eyaletinden 153 antrenör anketi tamamlamıştır.

#### **Veri Toplama Araçları**

Bu çalışmada veri toplama amacıyla 1) Antrenörlerin Öğretim Yöntemleri Kullanım Ölçeği (CUTEMS-Antrenör), 2) Teknoloji Etkileşimine Yakınlık Ölçeği (ATI) ve 3) Teknoloji Entegrasyonu Öz-Yeterlilik Ölçeği (TISE) kullanılmıştır. CUTEMS-Antrenör, antrenörlerin öğretim yöntemlerini kullanma durumlarını ve bunlara verdikleri değeri değerlendirmede kullanılan Kılıç ve İnce (2019) tarafından "Öğretim Stilleri ve Algıları Anketi"nden (Kulinna & Cothran, 2003) uyarlanan bir ölçektir ve üç öğretim yaklaşımını içeren 11 senaryo içermektedir. ATI ölçeği,

bireylerin teknolojiyi kullanma konusundaki tutum ve hazır oluş düzeylerini ölçen ve Franke ve ark. (2019) tarafından geliştirilen bir ölçektir. TISE ise Perkmen (2008) tarafından öğretmen adayları için tasarlanmış ve öğretmenlerin sınıfta teknoloji entegrasyonu algılarını sorgulayan 16 maddelik bir Likert ölçeğidir. Antrenörlerin Öğretim Yöntemleri Kullanım Ölçeği (CUTEMS-Antrenör) (Kılıç ve İnce, 2019) ve TISE anketi (Perkmen, 2008) çeviri-geri çeviri yöntemi ile Fransızca'ya uyarlanmış ve Faslı basketbol koçları üzerinde uzman görüşüne dayalı çeviri ve içerik geçerliği çalışması yapılarak bu araştırmada kullanılmıştır. ATI'nin (Franke ve ark., 2019) ise orijinal Fransızca formu kullanılarak veri toplanmıştır.

### **Veri Toplama Süreçleri**

Orta Doğu Teknik Üniversitesi İnsan Araştırmaları Etik Kurulu'ndan (Protocol Number: 0221-ODTUIAEK-2023) izin alındıktan sonra, Fas Basketbol Federasyonu ile resmi bir yazışma yapılarak antrenör listesi ve veri toplama izni alınmıştır. Dijital anket hazırlandıktan sonra, çalışmaya katılma ölçütlerini karşılayan tüm antrenörler internet üzerinde dijital formdaki anketi doldurmaya davet edilmiştir.

### **Veri Analizi**

Veriler, IBM SPSS Statistics 28 yazılımı kullanılarak tanımlayıcı istatistiksel yöntemlerle analiz edilmiştir. İlk olarak anket verileri hatalar, eksik ve aykırı değerler açısından gözden geçirilmiştir. Daha sonra, birinci araştırma sorusuna ait veriler MANOVA, ikinci ve üçüncü araştırma sorularına ait veriler ise ANOVA ile analiz edilmiştir ( $p < 0.05$ ).

### **Bulgular**

#### **Birinci Araştırma Sorusu**

MANOVA sonuçlarına göre, yaş  $F(12, 325) = 0.851, p = 0.598$ ; Wilk's lambda = 0.922, kısmi eta kare = 0.027, eğitim seviyesi  $F(6, 246) = 1.185, p = 0.315$ ; Wilk's lambda = 0.945, kısmi eta kare = 0.028 ve koçluk sertifikası  $F(3, 123) = 2.526, p = 0.061$ ; Wilk's lambda = 0.942, kısmi eta kare = 0.058 açısından öğretim yöntemlerinin algılanan kullanımında anlamlı bir fark bulunmamıştır (Tablo 1).

Tablo 1: Basketbol antrenörlerinin yaş gruplarına, eğitim seviyesine ve antrenörlük sertifikasına göre öğretim yöntemlerini kullanma ortalamaları (SS) puanları

| Değişken                           |               | n  | Antrenör<br>Merkezli<br>Reprodüktif<br>Yöntemler | Kullanım Durumu                 |                   |                                               | Anla-<br>mlılık |
|------------------------------------|---------------|----|--------------------------------------------------|---------------------------------|-------------------|-----------------------------------------------|-----------------|
|                                    |               |    |                                                  | Üretken<br>Çözmeye<br>Yöntemler | Problem<br>Dayalı | Üretken<br>Sporcu<br>Başlangıçlı<br>Yöntemler |                 |
| Yaş<br>(Yıl)                       | 18-24         | 13 | 3.11(0.62)                                       | 3.31 (1.21)                     | 2.51 (1.08)       |                                               | NS              |
|                                    | 25-34         | 51 | 2.98 (0.84)                                      | 3.15 (0.93)                     | 2.37 (0.99)       |                                               |                 |
|                                    | 35-44         | 33 | 3.17 (0.81)                                      | 3.38 (0.95)                     | 2.55 (0.96)       |                                               |                 |
|                                    | 45-54         | 25 | 3.22 (0.76)                                      | 3.35 (0.92)                     | 2.56 (0.85)       |                                               |                 |
|                                    | 55-65         | 31 | 2.83 (0.72)                                      | 3.01 (0.88)                     | 2.08 (0.70)       |                                               |                 |
| Eğitim<br>Düzeyi                   | Lise          | 28 | 3.04 (1.03)                                      | 3.07 (1.08)                     | 2.38 (1.01)       |                                               |                 |
|                                    | Lisans        | 78 | 3.06 (0.76)                                      | 3.26 (0.91)                     | 2.41 (0.84)       |                                               |                 |
|                                    | Lisansüstü    | 47 | 3.01 (0.67)                                      | 3.23 (0.93)                     | 2.37 (1.02)       |                                               |                 |
| Antrenörlük<br>Sertifika<br>Düzeyi | Mini Basket   | 85 | 3.07 (0.88)                                      | 3.22 (1.01)                     | 2.53 (0.98)       |                                               |                 |
|                                    | 1-2-3. Kademe | 68 | 3.00 (0.65)                                      | 3.21 (0.87)                     | 2.22 (0.83)       |                                               |                 |

NS: Anlamlı fark yok ( $p>0.05$ )

Basketbol antrenörlerinin öğretim yöntemlerine verdiği değer açısından, MANOVA sonuçları yaş grupları arasında anlamlı grup farklılıkları göstermiştir,  $F(12, 325) = 1.862$ ,  $p = 0.038$ ; Wilk's lambda = 0.839, kısmi eta kare = 0.057 (Tablo 8). Post Hoc testine göre, üretken sporcu başlangıçlı öğretim yöntemlerine verilen değer, 18-24 ve 25-34 yaş arası antrenörlerde 55-65 yaş arası antrenörlere kıyasla daha yüksektir (Tablo 2). Öğretim yöntemleri açısından yaş grupları arasında başka anlamlı farklar tespit edilmemiştir. Eğitim seviyesi  $F(6, 246) = 1.673$ ,  $p = 0.128$ ; Wilk's lambda = 0.923, kısmi eta kare = 0.039 ve koçluk sertifikası  $F(3, 123) = 2.039$ ,  $p = 0.112$ ; Wilk's lambda = 0.953, kısmi eta kare = 0.047 açısından öğretim yöntemlerine verilen değerlerde anlamlı grup farklılıkları bulunmamıştır.

Tablo 2: Basketbol antrenörlerinin yaş gruplarına, eğitim seviyesine ve antrenörlük sertifikasına göre öğretim yöntemlerine verdiği değer ortalamaları (SS) puanları

| Değişken     |       | n  | Antrenör<br>Merkezli<br>Reprodüktif<br>Yöntemler | Verilen Değer                                        |                                               | Anlam-<br>lılık                                                                                           |
|--------------|-------|----|--------------------------------------------------|------------------------------------------------------|-----------------------------------------------|-----------------------------------------------------------------------------------------------------------|
|              |       |    |                                                  | Üretken<br>Problem<br>Çözmeye<br>Dayalı<br>Yöntemler | Üretken<br>Sporcu<br>Başlangıçlı<br>Yöntemler |                                                                                                           |
| Yaş<br>(Yıl) | 18-24 | 13 | 3.28 (0.82)                                      | 3.74 (0.94)                                          | 3.14 (0.97) *                                 | Üretken<br>Sporcu<br>Başlangıçlı<br>Yöntemlere<br>verilen değer<br>18-24 ve 25-<br>35 yaş > 55-<br>65 yaş |
|              | 25-34 | 51 | 3.30 (0.81)                                      | 3.30 (0.82)                                          | 2.88 (0.90) *                                 |                                                                                                           |
|              | 35-44 | 33 | 3.34 (0.81)                                      | 3.34 (0.81)                                          | 2.86 (0.92)                                   |                                                                                                           |
|              | 45-54 | 25 | 3.30 (0.82)                                      | 3.30 (0.82)                                          | 2.80 (1.01)                                   |                                                                                                           |
|              | 55-65 | 31 | 2.99 (0.76)                                      | 2.98 (0.76)                                          | 2.27 (0.77) *                                 |                                                                                                           |
| Eğitim       | Lise  | 28 | 3.27 (1.01)                                      | 3.30 (1.18)                                          | 2.83 (1.07)                                   |                                                                                                           |

|             |               |    |             |             |             |
|-------------|---------------|----|-------------|-------------|-------------|
| Düzeyi      | Lisans        | 78 | 3.26 (0.77) | 3.41 (0.88) | 2.71 (0.82) |
|             | Lisansüstü    | 47 | 3.19 (0.71) | 3.48 (0.90) | 2.81 (1.03) |
| Antrenörlük | Mini Basket   | 85 | 3.30 (0.85) | 3.37 (0.88) | 2.83 (0.91) |
| Sertifika   | 1-2-3. Kademe | 68 | 3.18 (0.73) | 3.47 (0.88) | 2.68 (0.96) |
| Düzeyi      |               |    |             |             |             |

\* Anlamlı fark  $p < 0.05$

## İkinci Araştırma Sorusu

ANOVA sonuçlarına göre, basketbol antrenörlerinin yaş grupları arasında anlamlı ATI puan farkları vardır  $F(4, 152) = 3.79, p = 0.006$  (Tablo 3). Post Hoc testler, 18-24 yaşındaki basketbol antrenörlerinin ortalama ATI puanlarının 55-65 yaş grubundakilerden anlamlı şekilde daha yüksek olduğunu göstermiştir ( $p < 0.05$ ). Diğer yaş grupları arasında anlamlı fark bulunmamıştır ( $p > 0.05$ ). Eğitim seviyeleri açısından ANOVA sonuçlarına göre, basketbol antrenörlerinin ATI puanları arasında anlamlı fark vardır  $F(2, 152) = 4.59, p = 0.012$ . Post Hoc testi, lise eğitilmiş basketbol antrenörlerinin ATI puanlarının lisans ve lisansüstü derecelere sahip olanlardan anlamlı şekilde daha düşük olduğunu göstermiştir ( $p < 0.05$ ). Lisans ve lisansüstü eğitim alan basketbol antrenörlerinin ATI puanları arasında anlamlı bir fark bulunmamıştır ( $p > 0.05$ ). Mini Basket ve 1-2-3 Kademe antrenörlük sertifikalarına sahip basketbol antrenörleri arasında ATI puanları açısından anlamlı bir fark bulunmamıştır  $F(1, 152) = 0.01, p = 0.971$  ( $p > 0.05$ ).

Tablo 3: Basketbol antrenörlerinin yaş gruplarına, eğitim seviyesine ve antrenörlük sertifikasına göre Teknoloji Etkileşimine Yakınlığı (ATI) puanları

| Değişken                     |               | n  | ATI Puanı Ortalama (SS) | Anlamlılık                  |
|------------------------------|---------------|----|-------------------------|-----------------------------|
| Yaş (Yıl)                    | 18-24         | 13 | 4.68 (0.25)*            | 18-24 > 55-65               |
|                              | 25-34         | 51 | 4.31 (0.10)             |                             |
|                              | 35-44         | 33 | 4.06 (0.12)             |                             |
|                              | 45-54         | 25 | 4.44 (0.13)             |                             |
|                              | 55-65         | 31 | 3.99 (0.10)*            |                             |
| Eğitim Düzeyi                | Lise          | 28 | 3.88 (0.12)*            | Lise < Lisans ve Lisansüstü |
|                              | Lisans        | 78 | 4.23 (0.08)*            |                             |
|                              | Lisansüstü    | 47 | 4.47 (0.10)*            |                             |
| Antrenörlük Sertifika Düzeyi | Mini Basket   | 85 | 4.23 (0.78)             |                             |
|                              | 1-2-3. Kademe | 68 | 4.26 (0.08)             |                             |

\* Anlamlı fark  $p < 0.05$

### Üçüncü Araştırma Sorusu

ANOVA sonuçlarına göre, basketbol antrenörlerinin yaş grupları arasında anlamlı TISE puan farkları bulunmamıştır  $F(4, 152) = 1.39, p=0.184 (p>0.05)$  (Tablo 4).

Tablo 4: Basketbol antrenörlerinin yaş gruplarına, eğitim seviyesine ve antrenörlük sertifikasına göre Teknoloji Entegrasyonu Öz-Yeterlik (TISE) puanları

| Değişken                        |               | n  | TISE Puanları<br>Ortalama (SS) | Anlamlılık                     |
|---------------------------------|---------------|----|--------------------------------|--------------------------------|
| Yaş (Yıl)                       | 18-24         | 13 | 4.81 (0.82)                    |                                |
|                                 | 25-34         | 51 | 4.69 (1.18)                    |                                |
|                                 | 35-44         | 33 | 4.33 (1.25)                    |                                |
|                                 | 45-54         | 25 | 4.78 (0.81)                    |                                |
|                                 | 55-65         | 31 | 4.48 (0.92)                    |                                |
| Eğitim Düzeyi                   | Lise          | 28 | 4.42 (1.32)*                   | Lise < Lisans ve<br>Lisansüstü |
|                                 | Lisans        | 78 | 4.57 (1.01)*                   |                                |
|                                 | Lisansüstü    | 47 | 4.73 (0.99)*                   |                                |
| Antrenörlük<br>Sertifika Düzeyi | Mini Basket   | 85 | 4.51 (1.16)                    |                                |
|                                 | 1-2-3. Kademe | 68 | 4.70 (1.07)                    |                                |

\* Anlamlı fark  $p<0.05$

Eğitim seviyeleri arasında ANOVA sonuçlarına göre, basketbol antrenörlerinin TISE puanları arasında anlamlı farklar vardır  $F(2, 152) = 3.62, p=0.030$ . Post Hoc testi, lise eğitilmiş basketbol antrenörlerinin TISE puanlarının lisans ve lisansüstü derecelere sahip olanlardan anlamlı şekilde daha düşük olduğunu göstermiştir ( $p<0.05$ ). Lisans ve lisansüstü eğitim alan basketbol koçlarının TISE puanları arasında anlamlı bir fark bulunmamıştır ( $p>0.05$ ). Mini Basket ve 1-2-3. Kademe antrenörlük sertifikalarına sahip basketbol antrenörleri arasında TISE puanları açısından anlamlı bir fark bulunmamıştır  $F(1, 152) = 1.172, p=0.281 (p>0.05)$ .

### Tartışma ve Sonuç

Bu çalışma, Fas basketbol antrenörlüğünde öğretim yöntemlerini, antrenörlerin teknoloji etkileşimine yakınlığını ve teknoloji entegrasyonu öz yeterliliğini araştırmakta ve yaş, eğitim geçmişi ve sertifikasyonun antrenörlerin metodolojik ve teknolojik tercihlerini nasıl etkilediğine dair temel sorular ortaya koymaktadır.

Birinci araştırma sorusu bulgularına göre antrenörlerin yaşlarına, eğitim düzeylerine ve antrenörlük sertifikası düzeylerine bakılmaksızın, antrenör merkezli reproduktif

ve üretken problem çözme öğretim yöntemlerini, özerklik destekleyen üretken sporcu başlangıçlı yöntemlerden daha fazla kullandıkları söylenebilir. Ancak daha genç yaştaki antrenörler (18-34 yaş), daha ileri yaştaki antrenörlere (55-65 yaş) kıyasla üretken sporcu başlangıçlı öğretim yöntemlerine daha fazla değer vermektedir. Antrenörler tarafından öğretim yöntemlerine verilen değer, antrenörlerin eğitim ve antrenörlük sertifikası düzeyine göre değişmemektedir.

Antrenörlerin mesleki uygulamalarında antrenör merkezli öğretim yöntemlerini baskın olarak kullanmaları ve üretken sporcu başlangıçlı yöntemleri daha az kullanmaları literatürdeki önceki araştırmalarla uyumludur. Daha önce Kılıç ve İnce (2023), Türkiye bağlamında çeşitli spor dallarından antrenörlerle yaptıkları çalışmada, antrenörlerin antrenör merkezli reprodüktif öğretim yöntemlerini sıklıkla kullandıklarını ve sporcu başlangıçlı yöntemleri nadiren kullandıklarını belirtmiştir. Literatürde sporcu merkezli üretken yöntemlerin kullanılmasını öneren birçok antrenör eğitimi kaynağı olmasına rağmen (Pill vd., 2021; Mitchell vd., 2020; Cassidy vd., 2008), Kılıç ve İnce (2023) dışında antrenörlerin öğretim yöntemlerini kullanımını inceleyen bir çalışma bulunmamaktadır. Bununla birlikte, beden eğitimi öğretmenlerinin öğretim yöntemlerini kullanımına ilişkin çok sayıda çalışma bulunmaktadır ve bu çalışmalar da öğretmenlerin uygulamalarında öğretmen merkezli öğretim yöntemlerini sıklıkla, öğrenen merkezli öğretim yöntemlerini ise nadiren kullandıklarını göstermektedir (Parsak ve Saraç, 2019; İnce ve Hünük, 2010; Curtner-Smith ve diğerleri, 2001; Cothran ve diğerleri, 2005; Demirhan ve diğerleri 2008; Ertan ve Çiçek, 2003; Kulinna ve Cothran, 2003). Bu bağlamda, mevcut çalışmanın bulgularına göre, Fas'taki basketbol antrenörlerinin öğretim yöntemlerini kullanımının literatürdeki önceki çalışmalarla benzerlik gösterdiği söylenebilir.

Antrenörler ve beden eğitimi öğretmenleri tarafından üretken sporcu başlangıçlı öğretim yöntemlerine verilen değeri inceleyen çalışmalar da spor ortamında antrenör ve öğretmenlerin bu yaklaşıma daha az değer verdiğini göstermektedir (Kılıç ve İnce, 2023; İnce ve Hünük, 2010). Fas'taki basketbol antrenörleri üzerinde yapılan mevcut çalışmanın bulguları bu çalışmalarla uyumludur. Ancak, mevcut çalışma, Fas basketbolunda genç antrenörlerin üretken sporcu başlangıçlı yöntemlere yaşlı antrenörlerden daha fazla değer verdiğini göstererek literatürü genişletmiştir. Fas

basketbol antrenörlerindeki bu bulgu, daha sporcu merkezli antrenörlük felsefelerine doğru nesilsel değişim olduğu şeklinde yorumlanabilir.

Fas basketbol antrenörlerinin bu araştırma sorusuna ilişkin bulgularına dayanarak, antrenörlerin özerkliği destekleyici sporcu merkezli öğretim yöntemlerine ilişkin pedagojik alan bilgilerinin sınırlı olduğu açıktır. Bu durum, oyuncularının spora özgü yetkinlik ve üst düzey öğrenmenin hedeflendiği psikososyal gelişim alanlarındaki gelişimlerini muhtemelen olumsuz etkileyecektir (Kılıç ve İnce, 2023; Mitchell vd., 2020; Cassidy vd., 2008).

Basketbol antrenörlerinin üretken sporcu inisiyatifli öğretim yöntemlerini destekleyen özerkliğe verdikleri düşük değer de dikkatle değerlendirilmelidir. Bu durum, söz konusu antrenörler ilgili yöntemleri kullanmaya teşvik edilseler bile kullanmakta tereddüt edecekleri anlamına gelmektedir. Bu nedenle, antrenörler için hazırlanacak mesleki gelişim programları antrenörlerin değer algılarını pozitif yönde değiştirmeyi hedefleyecek şekilde dikkatle hazırlanmalıdır. Ayrıca, genç antrenörlerin sporcu başlangıçlı yöntemlere yaşlı antrenörlere kıyasla daha fazla değer vermesi, yeni nesiller antrenörlük mesleğine girdikçe sporcu merkezli özerkliği destekleyici öğretim yöntemlerine gelecekte daha çok yönelineceğinin bir göstergesi olabilir. Genç antrenörlerin bu yöntemlere değer vermesinin kökeni, okullardaki genel eğitim uygulamalarındaki değişiklikler ve yaşlı antrenörlere kıyasla yaşam deneyimleri çerçevesinde incelenmelidir. Genç antrenörler uygulamada bu yöntemlere değer verse de, bu antrenörlerin de ileri yaştaki antrenörlere benzer şekilde antrenörlüklerinde sporcu başlangıçlı yöntemleri nadiren kullandıkları unutulmamalıdır. Genç nesil antrenörlere yönelik antrenör eğitim programları bu durumu da göz önünde bulundurmalıdır.

Genel olarak, antrenörlerin öğretim yöntemlerini kullanması ve bu yöntemlere değer vermesiyle ilgili olarak, mevcut çalışma Fas Basketbol Antrenörlüğü ortamındaki durumu araştırarak literatürü genişletmiştir. Ayrıca bu çalışma, literatürde ilk kez antrenörlerin yaş gruplarına, eğitim durumlarına ve antrenörlük sertifikası seviyelerine göre öğretim yöntemi kullanımını ve değerini açıklamıştır.

İkinci araştırma sorusu bulguları genç antrenörlerin yaşlı meslektaşlarına kıyasla antrenörlüklerinde teknoloji araçlarını kullanma eğiliminde olduklarını göstermiştir. Bulgular ayrıca, lisans ve lisansüstü eğitim derecesine sahip antrenörlere kıyasla, lise mezunu antrenörlerin teknoloji etkileşimine daha az yakınlık gösterdiğini ortaya koymuştur. Bununla birlikte, antrenörlerin antrenörlük sertifikası düzeyi Teknoloji Etkileşimine Yakınlığı etkilememektedir.

Teknoloji etkileşimine yakınlık, bireyin teknik araçlar ve sistemlerle etkileşime girme eğilimini göstermekte ve insanların teknolojiyi kullanırken sergiledikleri çeşitli rahatlık ve motivasyon düzeylerini temsil etmektedir. Yakın zamanda Henrich ve arkadaşları (2022) ve Bush ve arkadaşları (2022) eğitim ve sağlık sektörlerinden profesyonellerin teknoloji etkileşimine yakınlıklarını rapor etmişlerdir. Henrich ve arkadaşları (2022), öğretmenlerin ATI'si ile pedagojik süreçlerde dijital araçları kullanmaları arasında bir bağlantı bulmuş ve öğretmenler arasında daha yüksek ATI seviyelerinin eğitimde daha etkili teknoloji kullanımıyla ilişkili olduğunu ifade etmiştir. Bush ve diğerleri (2022), yüksek ATI seviyesine sahip sağlık çalışanlarının elektronik sağlık kayıtlarını ve tele-sağlık hizmetlerini kullanma olasılığının daha yüksek olduğunu ve bunun da hasta bakımını ve operasyonel verimliliği artırdığını bildirmiştir.

Spor ortamında, daha yüksek ATI'ye sahip antrenörlerin mesleki uygulamalarında yeni teknolojiyi kullanma olasılığı daha yüksektir (Franke ve ark., 2019). Frankie ve arkadaşları (2019) genel popülasyonda 3,5/6,0 ATI puan ortalaması bildirmektedir. Mevcut çalışmada, ortalama ATI puanı yaş grupları arasında 3,99 ila 4,68, eğitim seviyeleri arasında 3,88 ila 4,47 ve koçluk sertifikası grupları arasında 4,23 ila 4,26 arasında değişmektedir. Frankie ve diğerlerinin (2019) raporunda yer alan genel popülasyon ortalamaları göz önünde bulundurulduğunda, Fas'taki basketbol antrenörlerinin diğer kültürlerdeki genel popülasyon ortalamalarına kıyasla teknoloji etkileşimine daha yatkın olduğu söylenebilir.

Yazarın bildiği kadarıyla, literatürde daha önce antrenörlerin ATI'sini araştıran bir çalışma bulunmamaktadır. Bu çalışma, antrenörlerin ATI'sini inceleyen ilk çalışmadır. Daha önce, Frankie ve arkadaşları (2019) yaş ve eğitim seviyesine göre

ATI puanı arasında bir ilişki olmadığını veya düşük bir ilişki olduğunu bildirmiştir. Bu çalışmada, Frankie ve diğerlerinin (2019) aksine, daha genç (18-24 yaş) ve daha yaşlı (55-65 yaş) antrenörler arasında daha genç olanlar lehine ve eğitim düzeyi arasında lise ve lisans-lisansüstü eğitim düzeyi arasında lisans-lisansüstü eğitim düzeyi lehine anlamlı bir fark bulunmuştur. Bu bulgu, gençlerin daha iyi dijital okuryazarlık seviyelerine sahip olduğunu ve teknolojiyi mesleki faaliyetlerine dahil etmeye daha istekli olduğunu gösteren teknoloji benimseme literatüründeki anlatı ile tutarlıdır (Mertala vd., 2024; Prensky, 2001).

Bu araştırma sorusu bağlamında genel olarak, mevcut çalışma Fas basketbol ortamındaki antrenörlerin yaşı, eğitim düzeyi ve antrenörlük sertifikası seviyesini sorgulayarak ATI hakkında kanıt sağlayarak literatürü genişletmektedir.

Üçüncü araştırma sorusu bulguları antrenörlerin teknoloji entegrasyonu öz yeterliliklerinin eğitim düzeyine göre değiştiğini ortaya koymuştur. Bununla birlikte, teknoloji entegrasyonu öz yeterliliği için yaş ve antrenörlük sertifikası açısından anlamlı bir fark bulunmamıştır.

Daha ileri eğitim almış antrenörler, antrenmanlarına teknolojiyi entegre etme konusunda daha fazla güven ifade etmişlerdir; bu da temel antrenörlük eğitiminin ötesinde eğitim deneyimlerinin teknoloji ile ilişkili öz yeterlilik oluşturmada kritik öneme sahip olduğunu göstermektedir. Bu durum, antrenörlerin teknolojik araçları kullanma konusunda güven ve beceri kazanmalarına yardımcı olmak için teknoloji eğitiminin antrenörlük eğitim programlarına dahil edilmesi gerektiğini vurgulamaktadır.

Literatürde, eğitim sektöründen profesyonellerin, özellikle de öğretmenlerin teknoloji entegrasyonu öz yeterliliklerini gösteren çok sayıda araştırma bulunmaktadır (Zeng, Wang, Li, 2022; Gomez vd. 2021; Perkmen, 2008, Semiz ve İnce, 2012). Bu çalışmalar, teknoloji entegrasyonu öz yeterliliği daha yüksek olan öğretmenlerin teknolojik pedagojik alan bilgilerinin de daha yüksek olduğunu göstermektedir. Bu, söz konusu öğretmenlerin teknolojiyi mesleki uygulamalarına etkili bir şekilde entegre etme potansiyeline sahip oldukları anlamına gelmektedir.

İlginç bir şekilde, antrenörlerin teknolojiyi sporcu öğrenimi için etkili bir şekilde kullanmasının önemini vurgulayan birçok çalışma olmasına rağmen, literatürde antrenörlerin teknoloji entegrasyonu öz yeterliliği ve teknoloji entegrasyonu hakkında sınırlı bilgi bulunmaktadır (Wells vd., 2023; Cushion ve Townsend, 2019; Dray ve Howells, 2019). Liebermann, Katz ve Sorrentino (2005), deneyimli antrenörlerin bilim ve teknolojiye yönelik tutumlarını inceledikleri bir çalışmada, antrenörlerin spor teknolojilerini kullanmanın genel öneminin farkında olsalar bile, olumlu tutumlarını profesyonel uygulamalarına yansıtamadıklarını belirtmiştir. Yakın zamanda, Maers, Phillips ve Sumner (2020) Golf sporunda elit sporcular için dijital teknolojinin algılanan etkinliğini incelemiş ve sporcu performansını analiz etmek için teknoloji kullanımına ilişkin olarak antrenörlerin, sporcuların ve destek personelinin ağırlıklı olarak olumlu görüşlere sahip olduğu sonucuna varmıştır.

Genel olarak bakıldığında, bu araştırma sorusunu bulguları Fas'taki basketbol antrenörlerinin teknoloji entegrasyonu öz yeterlilikleri hakkında kanıtlar sunarak konuyla ilgili literatürü genişletmiştir. Çalışma özellikle, teknoloji entegrasyonu öz yeterliliğinin artırılmasında antrenörlerin daha yüksek eğitim seviyesine ulaşmasının önemini vurgulamıştır.

Sonuç olarak, bu çalışmada Fas basketbol bağlamında antrenörlerin kullandıkları öğretim yöntemleri, teknolojiye olan yakınlıkları ve öz yeterlik algıları antrenör yaş grupları, eğitim ve antrenörlük seviyelerine göre incelenerek ortaya koymuştur. Bulgular doğrultusunda antrenörlerin yaş, eğitim düzeyi ve antrenörlük sertifika düzeylerine göre saptanan özelliklerine uygun antrenör mesleki gelişim programları hazırlanması önerilir. Gelecekte yapılan çalışmalarda, bu amaçla hazırlanan mesleki gelişim programlarının etkinliğinin incelenmesi önerilir.

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