



## Revitalising the Waning Students Industrial Work Experience Scheme (SIWES) in Agricultural Education in Higher Institutions

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### Abstract

*The Students' Industrial Work Experience Scheme (SIWES) has long been a vital aspect of agricultural education in Nigerian higher institutions, designed to bridge the gap between theoretical knowledge and practical industry experience. However, in recent years, the effectiveness of SIWES in agricultural education has waned, undermining its role in preparing students for the challenges of the agricultural sector. This paper examines the concept of SIWES, the objectives of SIWES in agricultural education, challenges of SIWES in agricultural education, impact of a declining SIWES on agricultural education and workforce development and innovative strategies for revitalizing SIWES in agricultural education. The paper proposes for a holistic approach to revitalise SIWES, emphasizing the importance of strengthening industry-academia partnerships, ensuring adequate funding, and developing contingency plans for environmental disruptions. Ultimately, revitalizing SIWES in agricultural education is crucial to improving the quality of graduates and enhancing the development of Nigeria's agricultural sector.*

**Keywords:** Revitalizing, Waning, Students' Industrial Work Experience Scheme, Agricultural education.

## Introduction

The Students' Industrial Work Experience Scheme (SIWES) is an integral aspect of higher education, designed to provide students with practical skills that complement the theoretical knowledge acquired in classrooms. Established in Nigeria in 1973 by the Industrial Training Fund (ITF), SIWES aimed to close the gap between academic instruction and industry demands, particularly in fields like agricultural education (Ogbu & Abah, 2020). Scholars have conceptualised SIWES in various ways. Adamu et al. (2021) characterize it as a structured, work-based learning programme offering students real-world experience in their respective fields. Similarly, Adebayo and Salami (2021) view it as an essential training system that connects students to industrial environments, enhancing their employability and technical skills. Another perspective by Eze et al. (2022) defines SIWES as an intervention fostering collaboration between higher institutions and industries to produce graduates equipped for the workforce. Despite its initial success, recent years have seen a decline in the effectiveness of SIWES, particularly within agricultural education. This decline is attributed to systemic issues such as inadequate funding, weak institutional frameworks, and a misalignment between industry expectations and academic training. To restore the programme's efficacy in preparing students for the agricultural sector, it is vital to reassess its implementation strategies, considering the impact of institutional structures, industrial partnerships, and external disruptions, such as irregular academic calendars.

The decreased participation and impact of SIWES in agricultural education are rooted in numerous structural and operational challenges. One significant issue is inadequate funding, which hampers both the administrative capacity of the programme and students' ability to fully engage in industry placements (Eze et al., 2022). Many institutions lack the financial and logistical support necessary to provide optimal industrial training experiences. Furthermore, students often face difficulties securing placements in relevant agricultural industries due to the limited number of agro-based industries willing to host interns (Adebayo & Salami, 2021). Agricultural education itself has been defined by various scholars. Bello and Adeyemi (2022) view it as a formal learning process that imparts knowledge and skills related to agricultural production, agribusiness, and rural development. Oladipo and Yusuf (2021) describe it as a specialised field within

vocational education that combines scientific principles with practical applications to improve agricultural productivity. Nwosu and Chukwuma (2020) define it as an educational framework designed to prepare students for careers in agriculture through a mix of classroom instruction, laboratory work, and field experiences. Without structured incentives to encourage industry participation, the goal of agricultural education is hindered, resulting in students either missing their industrial training or being placed in unrelated sectors. The failure to address these funding and placement challenges undermines the objectives of SIWES, requiring policy reforms to create a more sustainable and supportive framework. Beyond financial and placement issues, academic calendar disruptions also contribute to the diminishing impact of the scheme.

Natural disasters, such as flooding, have further contributed to the declining effectiveness of SIWES. In recent years, extreme weather events have disrupted industrial placements, particularly in agricultural regions prone to flooding (Bello & Adeyemi, 2022). Floods damage farmlands, displace agricultural workers, and interrupt the operations of agro-based industries, leaving many students without suitable placement opportunities (Oladipo & Yusuf, 2021). Additionally, floods damage infrastructure, making it challenging for students to reach designated training sites, thereby further reducing participation. Nwosu and Chukwuma (2020) note that natural disasters, such as floods, not only disrupt industrial training but also pose significant safety risks to students involved in fieldwork. Without contingency plans to manage these environmental disruptions, SIWES will continue to face setbacks, limiting its ability to offer valuable hands-on experience in agricultural education.

The Industrial Training Fund (ITF) plays a crucial role in SIWES implementation, overseeing the programme and ensuring that students and their supervisors receive stipends for their participation. However, delays, irregularities, and nonpayment of stipends to students and supervisors have been persistent issues, undermining the programme's success and discouraging student participation (Adebayo & Salami, 2021). Ukaegbu and Ibeh (2021) argue that financial incentives are crucial for motivating both students and supervisors to actively engage in industrial training. Without timely stipends, students struggle with transportation, accommodation, and other costs associated with their placements. Additionally, the absence of financial incentives for supervisors results in inadequate supervision, leading to poor student assessments and weak links between industry and academia (Oladipo & Yusuf, 2021). Addressing these payment inconsistencies is essential for ensuring that SIWES remains an attractive and functional programme for students and industry stakeholders. Without reliable financial support from the ITF, the sustainability of SIWES in agricultural education becomes increasingly uncertain, further diminishing the scheme's effectiveness.

Institutional frameworks and policy implementation also play pivotal roles in the success of SIWES. Many institutions face bureaucratic challenges that hinder the effective coordination of the programme, resulting in inconsistencies in student placements, monitoring, and evaluation (Ukaegbu & Ibeh, 2021). The lack of a standardised approach across institutions has led to variations in training quality, with some students receiving extensive practical experience, while others engage in minimal or irrelevant work. Moreover, the criteria for assessing students' industrial performance are often inconsistent, making it difficult to gauge the programme's impact accurately (Adekunle & Ojo, 2022). Strengthening institutional frameworks can revitalise SIWES, ensuring it better meets the needs of agricultural education. The decline of SIWES in agricultural education is a complex issue requiring targeted interventions across funding, academic planning, industry collaboration, and institutional policy. As academic calendars continue to be disrupted by unforeseen circumstances, such as natural disasters like floods, a more adaptive approach is needed to ensure that students do not miss critical industrial experiences. Addressing these challenges in a holistic manner will not only improve students' practical competencies but also contribute to the broader goal of agricultural sector development.

## Concept of SIWES

The Students' Industrial Work Experience Scheme (SIWES) is a structured training programme designed to provide students with hands-on experience in their chosen fields of study. Established in 1973 by the Industrial Training Fund (ITF), SIWES was introduced to address skill gaps among graduates, particularly in technical, vocational, and science-related disciplines (Oyetunde & Odu, 2021). As a mandatory component of higher education in Nigeria, SIWES is undertaken by students in universities, polytechnics, and colleges of education offering agriculture-related courses. The duration of the scheme typically spans six months for university students and one year for those in polytechnics and colleges of education, with the placement generally occurring during the third or fourth year of study, depending on the institution's academic calendar (Musa & Garba, 2022). Strategically integrated into the academic curriculum, the industrial attachment ensures that students gain practical experience before their final year, thus facilitating the application of theoretical knowledge in real-world industry contexts.

Iroegbu and Chidiebere (2020) define SIWES as a competency-based training programme aimed at equipping students with hands-on industrial experience, ensuring they acquire the practical skills essential for their careers. The programme bridges the gap between classroom learning and professional work environments, thus enhancing students' technical and professional competencies. According to Musa and Garba (2022), SIWES is an industry-academia collaboration initiative

designed to expose students to real-world workplace conditions, thereby developing their technical expertise, problem-solving skills, and adaptability to industry demands. This structured work-based learning experience allows students to integrate theoretical knowledge with industrial practices, improving their employability. Through this initiative, students gain relevant experience, preparing them for the workforce and contributing to national economic development.

### Objectives of SIWES in Agricultural Education

SIWES plays a critical role in enhancing agricultural education by providing students with real-world industry exposure. Its significance can be highlighted under the following key areas:

1. **Practical skill acquisition:** SIWES equips students with essential hands-on skills in various agricultural practices, such as soil management, irrigation, pest control, and agro-processing (Chukwudi & Ogbonna, 2022). By working in commercial farms, research institutes, and agro-based industries, students gain direct experience with modern farming techniques and equipment, improving their technical proficiency and problem-solving abilities (Madu et al., 2023).
2. **Bridging the gap between theory and practice:** One of the core objectives of SIWES is to ensure that students can effectively apply classroom knowledge in real-world agricultural settings. Agricultural education involves studying concepts such as crop production, animal husbandry, and agribusiness management, but without practical exposure, students may struggle to implement these principles effectively. SIWES provides an opportunity for students to test and refine their knowledge, enhancing their understanding of industry operations (Adebayo & Olufemi, 2023).
3. **Entrepreneurial skill development:** SIWES fosters entrepreneurship by exposing students to various agribusiness opportunities, including poultry farming, fish farming, organic agriculture, and food processing (Eze & Akpan, 2021). This exposure encourages students to explore self-employment options, reducing over-reliance on government jobs. By learning practical business strategies during their industrial training, students develop the ability to establish and manage their agricultural enterprises.
4. **Enhancing industry-academia collaboration:** The programme strengthens the relationship between higher institutions and agricultural industries, ensuring that the academic curriculum remains relevant to industry demands (Oseni & Falola, 2021). This collaboration facilitates knowledge transfer, mentorship, and networking opportunities for students, increasing their employability upon graduation. Additionally, industry participation in SIWES allows students to familiarise themselves with workplace expectations, emerging technologies, and best practices in modern agriculture.
5. **Encouraging research and innovation:** SIWES provides students with exposure to innovative farming techniques, precision agriculture, and climate adaptation strategies. This hands-on experience enhances their ability to conduct field research and develop innovative solutions to agricultural challenges (Umeh & Chukwu, 2023). Many students use their SIWES experiences as the foundation for their final-year research projects, contributing to advancements in agricultural science and technology.
6. **Improving employment prospects:** Employers often prefer graduates with industry experience, and SIWES provides students with a competitive edge in the job market. Those who have undergone industrial training are more likely to secure employment in agricultural firms, research institutions, and government agencies (Musa & Garba, 2022). Furthermore, SIWES enables students to explore different career paths, helping them make informed decisions about their professional futures.
7. **Developing work ethics and professionalism:** During their industrial attachment, students are exposed to real workplace conditions that help shape their professional behaviour. Skills such as teamwork, time management, problem-solving, and effective communication are developed through SIWES (Olanrewaju et al., 2023). These competencies are essential for career growth, ensuring that students graduate with both technical and soft skills required in the agricultural sector.

### Challenges Facing SIWES in Agricultural Education

Despite its significance in bridging the gap between academic knowledge and practical skills, the students' industrial work experience scheme (SIWES) in agricultural education faces numerous challenges that have hindered its effectiveness. These challenges range from funding issues to industry participation, administrative inefficiencies, and external disruptions such as natural disasters.

1. **Inadequate funding and irregular payment of stipends:** One of the most pressing challenges of SIWES in agricultural education is the lack of adequate funding. The scheme relies on financial support from the Industrial Training Fund (ITF) to provide stipends for students and allowances for supervisors. However, delays and inconsistencies in the disbursement of these funds have discouraged participation (Oseni & Falola, 2021). Many students struggle to afford transportation, accommodation, and other expenses associated with their industrial placements, leading some to abandon the training altogether. Additionally, the non-payment or delayed payment of supervisors' allowances has reduced the commitment of industry professionals to mentoring students, further diminishing the scheme's effectiveness.
2. **Poor industry participation and limited placement opportunities:** SIWES depends on the collaboration between higher institutions and agricultural industries to provide students with relevant work placements. However, many

agro-based companies and farms are reluctant to accept students due to limited resources, inadequate infrastructure, and a lack of incentives (Madu et al., 2023). Some industries perceive students as liabilities rather than assets, as they require supervision and training, which increases operational costs (Eze & Akpan, 2021). Consequently, students often struggle to find suitable placement opportunities, with some being forced to train in unrelated fields, thereby defeating the purpose of SIWES.

3. **Poor supervision and weak institutional oversight:** The effectiveness of SIWES depends on proper supervision by both industry professionals and academic institutions. However, weak monitoring and evaluation mechanisms have resulted in poor quality training experiences for students (Chukwudi & Ogbonna, 2022). In many cases, supervisors do not conduct regular site visits to assess students' progress, leading to situations where students either receive inadequate training or fail to participate in meaningful work (Umeh & Chukwu, 2023). Additionally, some institutions lack structured reporting systems to track student performance, making it difficult to ensure compliance with SIWES objectives.
4. **Disruptions due to academic calendar irregularities:** The timing of academic semesters has been another major issue affecting the implementation of SIWES in agricultural education. Frequent strikes, economic instability, and administrative delays in higher institutions have resulted in irregular academic calendars, which in turn disrupt SIWES placements (Adebayo & Olufemi, 2023). Many students miss the designated training periods due to these uncertainties, reducing their ability to gain practical experience before graduation. In some cases, universities and polytechnics attempt to compensate for lost time by shortening SIWES durations, which significantly limits students' exposure to industry practices.
5. **Natural disasters and environmental challenges:** Agricultural training is heavily dependent on climatic conditions and access to farmlands, research institutes, and agro-based industries. Natural disasters such as floods, droughts, and extreme weather conditions have significantly disrupted SIWES placements, particularly in rural and coastal areas (Musa & Garba, 2022). Flooding, for example, has led to the destruction of farmlands and research centres where students undergo training, limiting their access to hands-on agricultural experience (Ibrahim et al., 2022). Similarly, prolonged droughts and changing weather patterns have affected crop production and farm activities, reducing the scope of practical training available to students.
6. **Mismatch between curriculum and industry needs:** The agricultural industry is rapidly evolving with technological advancements in precision farming, smart irrigation, and agro-processing. However, the SIWES curriculum in many institutions has not been adequately updated to reflect these industry changes (Olanrewaju et al., 2023). As a result, students are often trained using outdated techniques that are no longer relevant in modern agricultural practices. The lack of alignment between institutional curricula and industry needs has made it difficult for graduates to transition smoothly into the workforce, reducing the overall impact of SIWES in preparing students for employment.
7. **Logistical and transportation challenges:** Many SIWES placements are located in remote agricultural areas where transportation and accommodation are major challenges. Due to poor road infrastructure and limited access to public transport, students often find it difficult to reach their designated training locations (Emecheta & Nwachukwu, 2023). The high cost of transportation further discourages participation, particularly for students from economically disadvantaged backgrounds. In some cases, students opt for placements in urban centres, even if they are unrelated to their field of study, simply because of accessibility issues.
8. **Lack of student commitment and engagement:** Some students approach SIWES with a lack of seriousness and motivation, viewing it as a mere academic requirement rather than an opportunity for skill development (Ajibola et al., 2023). This attitude is often fueled by poor supervision, inadequate funding, and limited exposure to career prospects in agriculture. Additionally, some students falsify attendance records or secure placements in organisations that do not provide meaningful agricultural training, further undermining the purpose of SIWES (Oseni & Falola, 2021).

### **Impact of a Declining SIWES on Agricultural Education and Workforce Development**

The decline of the students' industrial work experience scheme (SIWES) in agricultural education has significant consequences for students, the workforce, and the broader agricultural sector. As a crucial component of practical training, SIWES equips students with the hands-on experience necessary for professional competency. However, its diminishing effectiveness due to funding constraints, weak industry participation, irregular academic calendars, and environmental disruptions has led to several negative impacts on agricultural education and workforce development. Adebayo & Olufemi (2023) state the impact below.

One of the most pressing consequences is the growing skill deficiency among agricultural graduates. Practical training is essential for developing expertise in areas such as precision farming, agribusiness management, and mechanised agriculture. Without adequate exposure to industry practices, students graduate with theoretical knowledge but lack the technical competencies required in the modern agricultural workforce. This gap makes them less competitive in the job market and limits their ability to contribute meaningfully to agricultural production and research. Employers increasingly



prefer graduates with practical experience, leading to higher unemployment and underemployment among those trained in agricultural education.

The decline in SIWES has also contributed to reduced student interest in agricultural education. When students do not receive sufficient industry exposure, they become disengaged and perceive agricultural careers as less promising compared to other fields. This negative perception has resulted in a decline in enrolment in agricultural programmes, exacerbating the shortage of skilled professionals in the sector. The lack of enthusiasm among students further weakens the pipeline of future agricultural scientists, farm managers, and agribusiness entrepreneurs, ultimately affecting food production and rural development.

Another major impact is the weakening of industry-academia linkages. SIWES was designed to bridge the gap between theoretical education and real-world application by fostering collaboration between educational institutions and agricultural enterprises. However, with declining participation from industry partners, this connection has deteriorated, leading to a misalignment between the skills taught in higher institutions and the demands of the agricultural labour market. As a result, graduates often find themselves ill-prepared for the realities of modern farming and agribusiness, reducing their effectiveness in the field.

The decline of SIWES has also had adverse effects on agricultural innovation and research development. The programme provides students with opportunities to engage in field research, test new farming techniques, and gain insights into emerging trends in agriculture. However, when students are not adequately placed in research institutions or commercial farms, they miss the chance to contribute to technological advancements in the sector. This stagnation in research and innovation slows progress in areas such as climate-smart agriculture, sustainable farming practices, and agro-processing, ultimately limiting the country's ability to adapt to global agricultural challenges.

Food security is another area that has been indirectly affected by the decline of SIWES. Agriculture plays a vital role in ensuring food availability and sustainability, and well-trained professionals are needed to drive productivity and efficiency in the sector. With fewer graduates acquiring the necessary skills, farm productivity declines, leading to lower crop yields and a greater dependence on food imports. The lack of experienced agricultural professionals also affects the implementation of policies aimed at improving food production and distribution, increasing the risk of food insecurity in the long run.

The impact of SIWES' decline is also evident in the reduced entrepreneurial drive among agricultural graduates. In addition to preparing students for employment, SIWES provides exposure to agribusiness opportunities, farm management strategies, and value chain development. However, without proper training, students lack the confidence and knowledge to venture into self-employment or establish agricultural enterprises. This has contributed to an over-reliance on government and corporate employment, rather than fostering a generation of innovative agricultural entrepreneurs who can create jobs and contribute to economic growth.

Another serious consequence is the acceleration of rural-urban migration. Many agricultural graduates, unable to secure relevant industrial placements or practical experience, abandon farming-related careers and move to urban areas in search of non-agricultural jobs. This migration trend worsens the labour shortage in rural farming communities, reducing overall agricultural productivity. The absence of skilled professionals in rural areas also affects extension services, farm management, and the dissemination of modern agricultural techniques, further weakening the sector's capacity to thrive.

## **Innovative Strategies for Revitalizing SIWES in Agricultural Education**

### **1. Digital Learning Integration**

The integration of digital learning into SIWES can enhance students' exposure to modern agricultural techniques beyond traditional farm placements. Virtual farm simulations, for instance, can provide hands-on training in precision agriculture, pest management, and soil conservation techniques, allowing students to engage in experiential learning without geographical constraints (Obiora et al., 2023). Additionally, as asserted by Fakayode & Adetoro, (2020) e-extension services, such as mobile-based advisory platforms and online agricultural courses, can supplement students' practical experiences by offering access to expert knowledge and real-time problem-solving techniques. The adoption of remote monitoring tools can further ensure that students receive continuous guidance and assessment, enhancing the overall effectiveness of SIWES training.

### **2. Strengthening Industry-Academia Partnerships**

Collaboration between universities, research institutions, and agribusinesses is crucial in ensuring that SIWES remains relevant to industry needs. Ajibade et al (2022) opine that stronger partnerships can facilitate access to modern farming equipment, improved seeds, and innovative agronomic practices, which are often lacking in conventional university farms. Furthermore, internship placements in agro-industrial firms and commercial farms can expose students to large-scale farming operations, agribusiness management, and mechanised farming

techniques (Akinpelu et al., 2020). The implementation of co-supervision models, where industry experts work alongside academic mentors, can enhance students' learning by providing practical insights and industry-relevant skills that align with contemporary agricultural demands.

### 3. Competency-Based Training

A shift from time-bound internships to competency-based training can ensure that students acquire relevant skills rather than merely fulfilling the duration requirement of SIWES (Omotayo et al., 2019). Under this model, training is designed around specific skill sets, such as greenhouse farming, precision agriculture, and agro-processing, which students must master before completing their internships (Adeyemi et al., 2022). Additionally, modular training can be introduced, allowing students to undergo structured learning sessions on various aspects of modern agriculture, followed by practical applications in real farm settings (Balogun & Yusuf, 2023). Certification for key competencies acquired during SIWES can further improve students' employability, ensuring that they meet industry standards and can transition seamlessly into the workforce.

### 4. Entrepreneurial Training and Agribusiness Development

Embedding agribusiness training within SIWES can shift the focus from job-seeking to self-employment, fostering youth participation in agriculture as business owners. Agribusiness incubation programmes, which provide hands-on training in farm enterprise development, can equip students with the knowledge and skills required to establish and manage profitable agricultural ventures (Obiora et al., 2023). Furthermore, access to microcredit facilities, business mentorship, and linkages to agricultural value chains can empower students to launch and sustain their agribusiness enterprises. Training in sustainable and climate-smart agribusiness models, such as organic farming, hydroponics, and agroforestry, can further enhance students' capacity to develop innovative and environmentally friendly agricultural enterprises (Ajibade et al., 2022).

### 5. Enhancing Funding and Policy Support

Adequate funding and strong policy frameworks are essential for revitalizing SIWES in agricultural education. Increased government investment in SIWES can facilitate infrastructural development, improve students' stipends, and ensure the availability of modern training equipment (Ajibade et al., 2022). Additionally, policies that incentivise agribusiness firms to host students through tax reductions or financial support can expand internship opportunities, ensuring that more students gain practical experience. Establishing a monitoring and evaluation framework can also help track the impact of SIWES, ensuring that training programmes align with evolving industry trends and contribute to national agricultural development (Balogun & Yusuf, 2023).

## Conclusion

The revitalisation of the waning Students' Industrial Work Experience Scheme (SIWES) in agricultural education is imperative for ensuring that graduates possess the technical and entrepreneurial skills required for modern agricultural practices. While SIWES was initially designed to bridge the gap between theory and practice, its impact has diminished due to inadequate funding, weak industry linkages, outdated curriculum structures, and limited student engagement in real-world agricultural challenges. Addressing these shortcomings necessitates a holistic reform approach that integrates modern agricultural innovations, strengthens institutional collaborations, and enhances policy support. A restructured SIWES framework can create a new generation of agricultural professionals who are not only job seekers but also job creators, contributing to national food security and sustainable agricultural development.

## Way Forward

The following have been proposed as the way forward for revitalising the waning students industrial work experience scheme in agricultural education in higher institutions.

1. Agricultural education institutions must collaborate with industry stakeholders to design training modules that reflect the evolving nature of the agricultural sector. Additionally, integrating agritech applications such as drone technology for crop monitoring, blockchain for supply chain transparency, and big data analytics for yield forecasting can significantly enhance students' practical learning experiences.
2. SIWES should introduce mandatory skill certification programmes to ensure that students graduate with industry-recognised qualifications. The current assessment system, which focuses largely on attendance and report submissions, should be replaced with a structured skills evaluation framework. Awarding professional licenses in areas such as farm machinery operation, agro-processing, and greenhouse management will improve graduates' employability and position them for competitive opportunities in the global agricultural market.
3. The creation of university-owned demonstration farms and agribusiness hubs where students can engage in hands-on training throughout the academic year, rather than limiting practical exposure to internship periods. These demonstration farms can serve as innovation centres where students test new farming techniques, develop agribusiness ideas, and access mentorship from successful agripreneurs.
4. Revitalizing SIWES must involve an improved extension service model that connects students with experienced agricultural extension officers. These professionals can offer continuous mentorship, ensuring that students receive guidance on best farming practices, pest and disease control, and market intelligence.

5. Institutions should explore alternative funding sources, including public-private partnerships, international development grants, and alumni endowments. Additionally, creating an SIWES innovation fund to support student-led agricultural projects will encourage innovation and entrepreneurship in the sector.

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