



Research Article

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Investigating the Pedagogical Potential of Entrepreneurial Projects in Higher Education

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Abstract

The current rate of technological advancement across the globe underlines the importance of higher education institutions incorporating project-based learning into their teaching approaches. This article investigates the capacity of entrepreneurial projects to address the skills gap in the Sub-Saharan African higher education sector. This study was conducted in two rural universities in South Africa and Nigeria. Data were collected from student participants from the two institutions using semi-structured questionnaires. The authors discovered that, despite the involvement of student participants in entrepreneurial projects over a considerable period of time, most participants from both universities still exhibit inadequate skill levels. This result suggests that certain conditions should be met for entrepreneurial projects to be considered effective for teaching and learning in the higher education context. It is imperative to include enabling factors such as high-quality mentoring from industry professionals and an unwavering university support system for student entrepreneurs. These enabling factors are cornerstones that strengthen a university's entrepreneurial standing.

Keywords: Live projects, Higher education, Skills-based learning, Project-based education

1. Introduction

Education and skill development complement one another like two sides of a coin. In recent years, there has been a disparity between the labour market demands and higher education programmes across the globe (Antonia & Pinto, 2022). In other words, certain academic programmes in institutions of learning are becoming increasingly irrelevant as a result of the ongoing fourth industrial revolution. This circumstance produces a distortion in the job market, a situation where the demand for 21st-century skills supersedes its supply (Morley, 2017). To address the skills deficit in the labour market, many institutions of learning around the world strive to replace traditional

teaching methods with hands-on innovative pedagogies (Nguyen, Tran, & Le, 2019). However, most of these university-based entrepreneurial projects do not provide the anticipated results in terms of equipping students with work-ready skills (Woodside, 2018).

University-based entrepreneurial projects are becoming popular as effective instructional tools for fostering a real-world learning environment (Abrahams et al., 2021). This suggests that entrepreneurial projects are strategically established in universities to mitigate the skills shortage amongst students. In congruence, Alim (2020) submits that higher education institutions are mandated to produce graduates who have the necessary capabilities to handle the ensuing socioeconomic issues. The earlier submissions of Alim (2020) and Abrahams et al., (2021) were further corroborated by Ye & Ye (2021) who opine that high-quality graduates are more effectively produced with a curriculum that emphasizes real-world projects. The foregoing implies that project-based education, which engages students in the development of work-ready skills should therefore serve as a crucial component of students' learning.

Through real-world initiatives, students may cultivate transdisciplinary abilities and innovative culture (Lackeus, 2020). These activities, according to Schimperna (2021) include working with actual business people in a professional setting, a scenario which serves as a link between academic institutions and the outside world. These consist of experiential and contextual learning that promotes critical thinking in an active academic engagement (Anderson, 2017). This implies that the complex nature of entrepreneurial projects enables students to cultivate a variety of skills. Thus, a wide range of project-based adventures should be taken into consideration to ensure the success of project-based learning in the Sub-Saharan African higher education sector, subject to capital expenditure.

According to Döringer, (2020) and Guerrero & Urbano (2021), students who use project-based learning may develop the fundamental skills necessary to deal with life's uncertainties, making them future-oriented and prepared for the real world. In a typical live project, business professionals share their knowledge and provide students with real-world business puzzles to solve, financiers evaluate the viability of students' ideas, and educators offer theoretical underpinnings for the founding and development of new enterprises (Geza et al., 2022). This implies that students' learning experiences can be improved by combining different professional adventures such as mentorship, grooming, and business modelling into educational activities. The study's overarching objective is to evaluate the capacity of entrepreneurial projects to alleviate skill shortages in the Sub-Saharan African higher education sector.

2. A Theoretical Consideration for Effective Entrepreneurial-Project Practices

Based on prior research by John Dewey and Kurt Levin, American educational researcher David A. Kolb developed the cyclical model of experiential learning theory. The learning process creates information by carefully and progressively transforming experiences. The four-stage cyclical model of experiential learning theory includes real experience, perception, cognition, and behaviour. They concentrate on turning ideas into actions. (Kolb et al., 2001). This is the first stage of learning where students gain knowledge through activities or engagement in a learning environment. According to Zabolotnikova et al., (2020), learners acquire skills by participating in entrepreneurial projects. These projects involve direct engagement with the phenomenon being studied which extends beyond abstract concepts. It verifies a theory by relying on first-hand observations of the phenomena. Students may learn more about the quality of real-world projects that best meet their requirements and objectives by using experiential theory. Additionally, it motivates students to participate in skill development by encouraging collaboration, teamwork and brainstorming (Blenkinsopp & Beeman 2012) and Latif et al., (2020). Thus, team building is crucial to the entrepreneurial experience. During social interactions, students discover and settle on shared interests. This theoretical framework could imply that live projects promote deep learning as well as the acquisition of skills via practice and experience.

3. Literature Review

3.1 Pedagogical Potentials of University-based Entrepreneurial Projects

Entrepreneurial projects provide a framework for reimagining project-based learning as a social activity (Kamran et al., 2022). This concept develops a new platform that takes care of skills-based related challenges in the context of the higher education sector (Mehmood et al., (2019). According to Finch, Falkenberg, McLaren, Rondeau, & O'Reilly (2018), Project-based learning is founded on the idea that real-world learning is possible within a community of practice in which students participate as active participants. The foregoing suggests that a community of practice is one in which students acquire relevant skills and are also inducted into the world of entrepreneurship through community-based experience.

Universities weigh in by bringing in specialists to organize entrepreneurial ventures on campus (Jardim et al., (2021). The presence of specialists on campus, according to Lycko & Galanakis (2021) allows students to become accustomed to hands-on activities as intriguing and motivating subjects are gradually synchronized with the projects, In addition, Industry leaders are being relied upon to groom students in an entrepreneurial way. A group of scholars such as Van den Hurk & Tasan-Kok (2020); Sulistyani & Suhariadi (2022) and Wei et al., (2019) aver that students benefit from the hands-on learning adventure by gaining a deeper knowledge of the courses they study. These entrepreneurial projects stimulate students to gain work-ready skills and smoothen their transition from learning institution into the world of work, however, the review of the work of Lauder & Mayhew (2020) demonstrates that the capacity of entrepreneurial projects to alleviate skills gap amongst students is limited by certain factors such as quality of support system for student entrepreneurs and entrepreneurial culture of academic institutions.

According to Ikuemonisan et al., (2022); Malsch & Guieu (2019) as well as Marino-Garrido et al., (2020), the establishment of entrepreneurial projects could be costly. In other words, limitations might come in form of time and financial constraints as well as the quality of projects. In congruence, Ratten & Jones (2021) submit that these constraints make it difficult for instructors to include outdoor learning opportunities in their curriculum. The foregoing indicates that if outdoor entrepreneurial learning is to be implemented as a pedagogical strategy, then high-quality projects should serve as the baseline for skills-based learning. In addition, Coulibaly (2020) submits that higher-order critical thinking, problem-solving, and reflecting abilities are all fostered by a hands-on learning approach and are crucial for the growth of entrepreneurial behaviours. According to Tezcan et al (2020) and Usman et al., (2021), real-world projects provide students with the opportunity to acquire relevant skills such as; creativity, critical thinking, digital communication and innovation.

The preceding analysis is predicated on the concept that creativity can be taught and creative behaviour can be learnt. It is about applying the project approach to learning, which has the ability to develop students' innovative thinking and creativity (Morselli, 2018). According to Sansone et al., (2021), the effectiveness of project-based learning is determined by certain factors such as; students' educational qualifications, personal motivation, as well as the quality of accessible resources. Conversely, Lackeus (2020) and Patzelt et al., (2021) note that it is debatable that live projects are typical learning platforms with strong application across a variety of disciplines, following a review of case studies of outdoor learning and entrepreneurial projects as a learning model. According to Scott et al., (2019), entrepreneurial projects provide the path for the development of a broad variety of entrepreneurial skills that are also useful in the workplace, furthermore, students are extremely motivated and actively involved in the projects. Scott et al., (2019) further submit that entrepreneurial initiatives encourage student collaboration and digital communication skills, in other words, entrepreneurial projects allow students to apply academic knowledge in a professional setting. The submissions by a group of scholars such as Martens (2018); Niemann & Dickel (2022), as well as Obstfeld et al., (2020), could be summarised as follows:

- Live project education promotes not only skill development but also community development.
- Live initiatives provide fresh information needed for contemporary professional practice.
- Students encounter a possible link between theory and practice.
- The live project learning method reflects the growing socially engaged curriculum.
- Live projects offer a break from the norm, challenging the university's regimented learning framework.
- Effective live projects supplement traditional academic programmes.
- Student engagement in live projects promotes community development.
- Live projects as educational tools exhibit certain drawbacks that should be taken into cognizance.

4. Methodology

This study was conducted in two rural universities in South Africa and Nigeria and the results are presented in this report. The institutions were selected based on students' participation in entrepreneurial project activities. In order to obtain primary data, 75 third-year students from a South African university were selected, along with 83 third-year students from a Nigerian university. The third-year students were purposefully selected based on the number of years they had spent in the university setting, and thus they are deemed appropriate to supply useful knowledge regarding the university system. Semi-structured questionnaires with the same sets of questions were given to participants from the two universities to complete. The participants were selected using a systematic sampling process and were encouraged to give their opinions on current project practices in their individual institutions in relation to their self-perceived skill levels. This research is also complemented by archival evidence from peer-reviewed journals that provide current literature on skills development trajectories in the Sub-Saharan African higher education sector.

5. Findings

The study results indicates that policymakers at the two universities have taken steps to implement innovative strategies that promote skills development amongst students. The table below summarizes the participants' opinions on the various types of live projects run by students on campus.

Table 1: Patterns of Student Participation in Live Projects

South Africa	Participants %	Nigeria	Participants %
Marketing of products	60,7%	Fishery	24.6%
Foods processing	22,4%	Horticulture	17.3%
Fashion design	16,9%	Rice planting	58.1%
Total	100%	Total	100%

Table 1 depicts the real-world project techniques embraced by students at the two universities to gain core skills. The majority of South African participants were involved in marketing a wide range of finished products, whereas rice plantations were the most popular activity at the Nigerian university. These initiatives were conducted in groups to ensure effectiveness. The students were facilitated by instructors who worked in the above-mentioned vocations in the respective university communities. The findings also show that the active participation of each undergraduate in at least one live project is a prerequisite for the completion of a bachelor's degree at the selected Nigerian university across all faculties, whereas this is not a requirement for their South African counterparts. As a result, most of

the South African participants were from the Faculty of Commerce, where business management lecturers encourage students to get involved in some entrepreneurial projects.

5.1 Perceived Entrepreneurial Skills Levels of Participants

The results, as shown in Table 1, indicate that the South African participants' ratings were below average in all skills metrics, including innovative thinking (31.6%), leadership skills (41.8%), creativity (39.9%), teamwork (48.1%), goal setting (43.7%), negotiation (7.2%), budgeting (24.0%), financial discipline (41.8%), selling (47.4%), and networking skills (7.2%). It should be noted that the questionnaire did not assess actual skills; rather, it relied on self-evaluations of skills on the part of students.

Further analysis of the findings revealed that Nigerian participants rank above average in selling (73.2%), but the ratings fall below average in all other skills metrics, including innovative thoughts (33.3%), leadership skills (41.2%), creativity (43.3%), teamwork (31.6%) goal setting (31.9%), negotiation (10.8%), budgeting (7.0%), financial discipline (42.0%), and networking skills (8.4). Based on the foregoing, it can be concluded that there are grounds for questioning the efficacy of project-based learning, as it is being implemented in the two selected universities.

Table 2: Perceived Entrepreneurial Skills Levels of Participants

S/N	Statement	Country	N	Sum of Ranks	Test Statistics	P-value
1.	Innovative thoughts	SA	75	49073.32	41948.00	0.004
		NG	83	40854.02		
		Total	158			
2.	Leadership	SA	75	46474.38	44946.00	0.002
		NG	83	48643.14		
		Total	158			
3.	Creativity	SA	75	45252.93	40248.00	0.007
		NG	83	45748.53		
		Total	158			
4.	Teamwork	SA	75	45965.94	41942.00	0.001
		NG	83	40638.74		
		Total	158			
5.	Goal setting	SA	75	48213.03	46394.00	0.009
		NG	83	47294.90		
		Total	158			
6.	Negotiation	SA	75	51947.42	41456.00	0.001
		NG	83	40843.38		
		Total	158			
7.	Budgeting	SA	75	46027.30	44948.00	0.004
		NG	83	49376.39		
		Total	158			
8.	Financial discipline	SA	75	45032.01	46203.00	0.008
		NG	83	40123.32		
		Total	158			
9.	Selling skills	SA	75	51494.02	46224.00	0.195
		NG	83	49132.04		
		Total	158			
10.	Networking	SA	75	46028.30	48037.00	0.009
		NG	83	48038.02		
		Total	158			

From Table 2, the p-values for most of the statements in the table are less than the significance level (0.05), which implies that the submissions from the two countries on the statements are similar.

Hence, it can be concluded that participants' skill levels in the two countries were statistically similar. However, the P-value of the ninth item was higher than 0.05, which further indicates that there is a significant difference in the responses of students to item 9. This implies that respondents from the Nigerian university were comparatively better off than their South African counterparts in selling skills, as presented below.

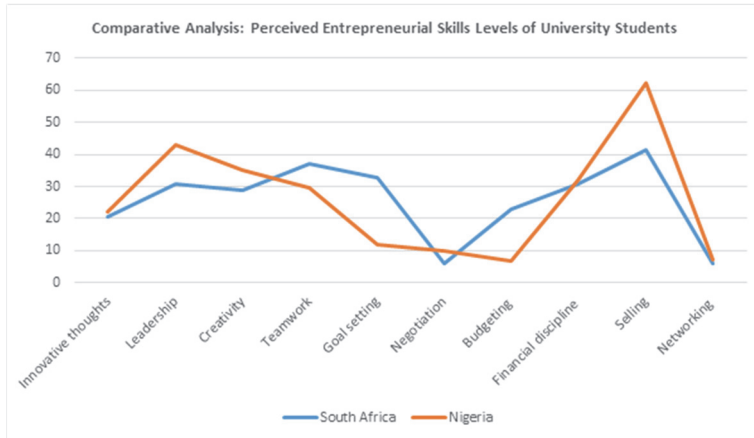


Figure 1: Perceived Entrepreneurial Skills Levels of Participants

5.2 Relationship between project-based education and students' skill levels

A correlation analysis was also performed to establish the statistical relationship which exists between project-based education and students' skill levels, this is required to gain a deeper understanding of the responses presented in table 1.

Table 3: Summary of correlation analysis showing the relationship between live project education and students' skill levels

Variable	N	Mean	SD	Sig. (2-tailed)
Networking skills	158	0.40	0.381	0.176
Negotiation	158	0.52	0.361	0.038
Creativity	158	0.06	0.271	0.088
Innovative thoughts	158	0.04	0.320	0.288
Teamwork	158	0.05	0.303	0.326
Selling	158	1.66	0.788	0.601
Leadership skills	158	0.04	0.381	0.021
Financial discipline	158	0.53	0.288	0.188
Goal setting	158	0.24	0.388	0.286
Budgeting	158	0.14	0.381	0.027

The table above shows that project-based education has no significant effect on South African participants in relation to all skills metrics. Further analysis also shows that only selling skills had a significant correlation with project-based education ($r = 0.601$) in the selected Nigerian university. As a result, every gain in project-based learning scores will result in a faster rate of improvement in students' capacity to sell finished products. Comparatively, Nigerian participants significantly demonstrate higher levels of selling skills than their South African counterparts.

5.3 Factors Restricting Entrepreneurial Skills Acquisition amongst Students

This section presents respondents' views on the factors that limit their skills acquisition drive in the university. The table indicates that the majority of the respondents from the two universities indicated that the problem has to do with an inadequate university support system (SA=88%, NG=69%) and lack of a mentorship programme in the university (SA=72%, NG=93%).

Table 4: Respondents' views on obstacles restricting their ability to acquire skills

What makes it difficult for you to acquire entrepreneurial skills at the university?	SA (views %)	NG (views %)
1. Lack of interest on the part of lecturers	8%	5%
2. Difficulty in maintaining a balance between academics & entrepreneurial project work	11%	19%
3. Inadequate university support system	88%	69%
4. Lack of mentorship programme	72%	93%

6. Discussion of Findings

Based on the findings, the majority of the students from both universities lack the fundamental skills required by almost all professionals to remain competitive in the digital age. This suggests that the contribution of project-based education to student's skill development in this regard was insignificant. This finding contradicts the claims of (Breed & Mehrtens (2022), Rohm et al., (2021), Chang & Rieple (2013); Knott et al., 2021) who found that experiential projects provide transformative education and that students who participate in experiential projects improve in a variety of skills. This study identifies certain flaws in the ways in which project-based education is being delivered in the two selected universities.

The authors contend that the quality of entrepreneurial projects in the two selected universities might have fallen short of the standard required to produce highly skilled graduates. This claim is affirmed by the views of the majority of the students who indicate that student entrepreneurs do not receive adequate support from the institution of learning. The findings uncover weak entrepreneurial culture which has the tendency to undermine entrepreneurial skills acquisition in the two selected universities.

Additionally, one of the limiting factors in the two selected universities is the absence of mentorship programmes. According to Canton (2021), mentorship is a prominent component of skills development which cannot be overemphasized. It promotes students' ability to handle complex entrepreneurial tasks. Furthermore, mentorship programs inspire students to learn from failures as well as learning from entrepreneurs (Kamran et al., 2022). The foregoing suggests that if project-based education is to be adopted as an instructional strategy in a university setting, it is imperative to include other enabling factors such as high-quality mentoring from industry professionals and an unwavering university support system for student entrepreneurs.

Despite the identified inflexibilities in the circumstances of the two institutions under study, the authors acknowledged the transformational potential of live project pedagogy. According to Al-Kwafi et al., (2022) and Blesia et al., (2021), when a university is linked to a corporate organisation, students can develop relevant skills through close interaction with business practitioners. A group of scholars such as Bruns-Berentelg & Grydehøj (2022); Chen et al., (2021), as well as Dalibozhko & Krakovetskaya (2018), aver that live project pedagogy, does more than only encourage skill development. According to Di Muro & Turner (2018), effective implementation of hands-on activities in a university setting has the tendency to create new knowledge. In line with the foregoing, Giudici, Guerini & Rossi-Lamastra (2018), student involvement in group projects translates into community development, and student social entrepreneurship efforts have a transformative influence on the

quality of life of community dwellers.

Conversely, current literature indicates that the use of live projects as teaching instruments is not without its limitations. For instance, the majority of student participants in this study indicate a lack of interest on the part of lecturers. In congruence, Di Muro et al., (2021) note that lecturers often shy away from engaging students in hands-on activities due to the length of time required to set up live projects in academic contexts. Furthermore, Di Pietro & Masciarelli (2022) argue that the usefulness of live projects for teaching and learning may be hampered by weak group members who may not make any real contribution to a project; as a result, such persons risk missing out on learning opportunities. In other words, individual evaluation of team members' contributions is imperative for an effective school acquisition process to thrive.

The foregoing suggests that the effectiveness of live projects pedagogy could be maximised by addressing the drawbacks earlier identified. Surmise to state that live project pedagogy challenges the conventional teaching approaches and this may elicit resistance from sceptics. According to Durmuşoğlu (2018) and Kanwal et al., (2019), live projects pedagogy is an attempt to depart from conventional teaching methods by establishing a new order. As a result, Goethner (2021) submit that lecturers that depend on the old order may take extreme measures to prevent the emergence of a new order. Surmise to state that lecturers may choose to maintain conventional teaching techniques that they have been accustomed to; which might be the reason for the dearth of live project activities in many universities, especially in the context of Sub-Saharan Africa.

7. Conclusion

This study has identified the critical factors that undermine the pedagogical potential of entrepreneurial projects in the two selected universities. This result emphasises the need for higher education institutions, particularly those in Sub-Sahara Africa to step out of their comfort zones and strive to fulfil the reason for their existence. In the digital era, African society sees universities as agents of change and development. As a result, university education should go beyond generating graduates with a specific certification; the certificates should be enriched with globally relevant skills. However, grooming of highly competent graduates does not happen overnight, it requires the combined efforts of all stakeholders. Graduates should be able to apply innovative approaches to solving complex problems and they should also realise that innovative approaches to problem-solving necessitate collaboration in a multidisciplinary context. Above all, the authors contend that project-based education may be successful when all factors that support effective skills acquisition initiatives are put in place. These enabling factors are cornerstones that strengthen a university's entrepreneurial standing.

The following recommendations were made based on the findings of this study:

- The design of entrepreneurial projects could draw on students' sociocultural backgrounds, this will enable the universities to address individual student requirements.
- The universities in Sub-Saharan African nations could ensure that entrepreneurship education is mandatory across all the university faculties.
- It is imperative to establish and strengthen the university mentorship programme; this approach has the tendency to foster entrepreneurial culture on campus.
- In addition to encouraging students to participate in entrepreneurial projects; appropriate faculty assistance will go a long way toward encouraging students to persevere in the face of adversity.

8. Suggestion for Further Studies

What the authors did not do in this study, which needs to be done in future research, was a deeper investigation into why students felt inadequate in almost all the skills assessed. Furthermore, the

authors had no data to determine whether the participants' experiences were similar to those of their counterparts at other universities in their respective countries. Consequently, it will be interesting for future research to scrutinize the conditions under which project-based education produces optimal results.

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