ADVANCE SOCIAL SCIENCE ARCHIVE JOURNAL
Available Online: https://assajournal.com
Vol. 04 No. 01. July-September 2025.Page#.3073-3080
Print ISSN: 3006-2497 Online ISSN: 3006-2500
Platform & Workflow by: Open Journal Systems
https://doi.org/10.5281/zenodo.16947457

Blending Entrepreneurial education with pedagogical innovation a mixed methods study on teaching practices in higher education

Rashid Hameed
PhD Scholar Educational Training
The Islamia University of Bahawalpur
rashidarsalan1@hotmail.com
Dr. Sobia Altaf
Lecturer
Department of Educational Training
The Islamia University of Bahawalpur
sobiahussain751@gmail.com
Maria Yousuf
Assistant Professor
Government Graduate College (W) Satellite Town Bahawalpur
mariayousuf143@gmail.com
Muhammad Nadeem
PhD Scholar Educational Training
The Islamia University of Bahawalpur
akramnadeem702@gmail.com
Muhammad Asif Nadeem
PhD Scholar Educational Training
The Islamia University of Bahawalpur
asif41bwpyzn@gmail.com
Ali Zulqarnain
PhD Scholar Educational Training
The Islamia University of Bahawalpur
alizulqarnain670@gmail.com

Abstract
In answer to the need for creative and flexible learners around the world, this study looks into how business education and new ways of teaching can be combined in higher education. A mixed-methods research approach was used for the study, which polled 394 senior students from three universities and talked to staff members and student businesses in-depth. During the quantitative part, structural equation modeling was used to look at the link between business teaching methods and students' ability to come up with new ideas. At the same time, theme analysis of conversations revealed important information about learning situations and problems teachers

face. These results show that standard, lecture-based ways of teaching are not enough to help people become entrepreneurs. Project-based learning, design thinking, and mentoring are much more effective at getting students excited about starting their own businesses and making sure they are ready to do so. This study shows how important context-driven teaching methods are and what can be done to make sure that curriculum development, staff training, and institutional strategy are more in line with the problems that entrepreneurs face in the real world.

Keywords: Entrepreneurial Education, Pedagogical Innovation, Teaching Practices, Higher Education, Mixed Methods Study

Introduction

The world economy is going through a big change because of fast technological progress, growing globalization, the rise of the gig economy, and levels of unpredictability and chaos that have never been seen before. This changing world needs workers who not only have specialized subject knowledge but also, and this is more important, have very developed business ideas. These ways of thinking include many skills, such as being creative when finding problems and coming up with solutions, being able to adapt to situations that change quickly, having strong problem-solving skills, and being able to keep going even when things go wrong. They also involve taking the initiative, taking measured risks, seeing opportunities quickly, and making good use of limited resources. Because of this, more and more colleges and universities around the world are adding entrepreneurial education (EE) to their programs. This can be in the form of specialized centers and degree programs, as well as modules that are built into traditional subjects and a growing number of extracurricular activities. Changing this strategy shows a deep understanding that encouraging an entrepreneurial spirit is important for many reasons, including boosting economic growth and innovation, making people more employable, and improving society. It's not just about starting a business; it's about developing skills that can be used in many professional and personal settings.(Frederick, Kuratko, & O'Connor, 2016) Hence, the need to foster these business skills has become a central part of modern educational policy and institutional strategy. The goal is to close the crucial gap between what students learn in the classroom and the complicated and often unclear needs of the real world.(Neck & Greene, 2011) On the other hand, for business education to really work, traditional ways of teaching have to be completely thrown out the window. Traditional ways of teaching, like big classes, passively passing on information, memorisation by heart, and standardised tests, are naturally bad at developing the dynamic, hands-on, and iterative skills that are needed to be successful as an entrepreneur. These kinds of methods often don't connect academic ideas with real-world applications, and they don't encourage the critical thought, imagination, and direct engagement that are needed to deal with real-world business problems. Pedagogical innovation, which includes a wide range of active learning techniques, is necessary to make learning settings that are engaging, powerful, and transformative. Some of these new ways of learning are project-based learning (like real-life client challenges and community-based projects), design thinking methods (which stress empathy, ideation, prototyping, and iterative testing), and structured mentorship programs (which give students access to experienced entrepreneurs and industry experts). These methods actively encourage students to work on difficult, poorly defined problems, make and test prototypes, improve their ideas based on feedback, and most

importantly, learn from both successes and failures in a safe space. This is meant to reflect the real, often chaotic problems that entrepreneurs face.(Gibb, 2002) Systematically incorporating these kinds of practices is important for creating a lively learning environment where students can try new things, work together, build strong self-efficacy, and eventually gain the confidence and skills they need to run their own businesses.(Lackéus, 2015)

Even though there is more focus around the world on both expanding entrepreneurial education and using new teaching methods in higher education, there is still a big question that hasn't been fully answered about how these two important areas can be effectively combined and used in different institutional settings. A lot of research has been done on the idea of entrepreneurial education and the benefits of new ways of teaching in general. However, there isn't as much research that looks at how these things actually work together in the classroom, including the specific teaching methods that are used, the factors that affect their adoption, and how these methods are thought to affect students' learning outcomes and their plans to become entrepreneurs. This lack of knowledge includes not knowing how long-lastingly successful different mixtures of teaching methods are, the difficulties teachers face when trying to use these approaches, and the exact ways to measure the growth of business skills. This important research gap shows how important it is to do thorough, multifaceted studies that look into the practical use, perceived effectiveness, and contextual nuances of new teaching strategies designed specifically for entrepreneurial learning across a wide range of academic fields and institution types.(Fayolle, Lamine, Mian, & Phan, 2021)

In this article presents a mixed-methods study aimed at exploring teaching practices in entrepreneurial education in higher education. The study combines quantitative data on the prevalence, frequency, and perceived effectiveness of various pedagogical approaches with qualitative insights from in-depth interviews and focus groups with educators and students. The mixed-methods approach provides a nuanced understanding of current practices, offering insights into widespread trends and underlying reasons. The findings will contribute to the ongoing discourse on best practices in entrepreneurial education, offering actionable implications for curriculum design, faculty development programs, and evidence-based policy formulation. The goal is to cultivate the next generation of agile innovators, resilient problem-solvers, and impactful entrepreneurs who can drive economic and social progress.

Literature Review

A lot of study has been done on entrepreneurship education, looking at things like entrepreneurial skill, entrepreneurial mindset, creative spirit, and entrepreneurial purpose.(Bazan et al., 2020; Cope & Watts, 2000; Hess, 2007)

(Antonelli et al., 2024) discovered that teaching tools like games and models help students become more creative, especially when it comes to learning about money, being motivated, and taking the lead. While the review acknowledges that online learning and Massive Open Online Courses (MOOCs) have promise, it also points out that different studies have come to different conclusions. This suggests that how well they work depends a lot on how they are designed and where they are used. This body of work shows that technology is not a magic bullet, but it can be a powerful tool when carefully incorporated into a competence-based teaching structure.

(Arendt, 2024) proved that it is especially interesting because it goes "beyond entrepreneurship education" to look at the long-term effects of different ways of teaching in many different business schools. Their results are unique because they show that "competence-based teaching models" have a good effect on grads' ability to start their own businesses in the future, even if the school wasn't specifically focused on entrepreneurship. This shows that developing a business attitude isn't just something that happens in entrepreneurship classes, but also happens when teachers use new ways to teach across the whole curriculum. This result has important implications for how universities should strategically implement new ways of teaching.

(Hannula, Sormunen, Hakkarainen, & Korhonen, 2025) used a mixed methods design to look at how an educational strategy affected teachers' ability to use both traditional and digital teaching methods. This study shows how important it is to look at both numeric and qualitative data to fully understand teachers' experiences. This shift in methods shows that more and more people are realising that to fully understand the teaching and learning process, we need to look at both the "what" and "how" questions.

(Simba, Tajeddin, Jones, & Rambe, 2025) did study in a developing country found that required entrepreneurial education alone didn't have much of an effect. Instead, it was active teachers and events outside of class that really sparked students' desire to be innovative. This shows that using new teaching methods effectively isn't always possible and needs to be changed to fit different situations and the resources that are available. Taking into account the situation is an important change in the research that leads to better and more useful advice for professionals.

(Al-Maamariyah, 2024) conducted recent research, another important theme that keeps coming up is the in-depth study of how various new teaching methods work in various settings. If you look at how project-based learning (PBL) affected students' ability to be entrepreneurs in Oman's higher education institutions (HEIs), you'll see that it made a big difference in their grades and their ability to solve problems, especially when it came to digital business. This study and others like it show how important it is to make sure that new ways of teaching fit the cultural and economic needs of an area. It shows that the ideas behind active and hands-on learning are global, but they need to be used in a way that is appropriate for the situation. This new wave of study goes beyond a one-size-fits-all plan to give teachers around the world more useful, usable information.

(Mavlutova, Spilbergs, Lesinskis, & Maditinos, 2025) studied on the digital tool KABADA found that it made Generation Z students more likely to want to start their own business. However, this effect wasn't statistically significant for all parts of purpose. This shows that digital tools are strong, but their effects aren't always the same and rely on the skills that are being targeted. Furthermore, studies now look at the problems of digital literacy and the "digital divide," recognizing that the lack of technology facilities or teacher training can stop these tools from reaching their full potential, something that became very clear during the pandemic.

Methodology

This study used a mixed-method research methodology to gather as much information as feasible while maintaining a high level of rigor.(Wyatt, 2018) The goal of the study above is to give strong support for the innovation capability research model. So, the mixed design took into account the views of people who have a stake in business education.

Research Approach: This study uses a mixed-methods approach that combines inductive and logical thinking. This gives it a theoretical foundation that includes the main parts of the topic: how teaching business affects the ability to come up with new ideas. When making study goals and beliefs, it also helps guide the process. The pragmatist view on knowledge was picked for this study because it looked into the real causes and growth experiences that led to the bad results of business education.

Research Design: As part of mixed-method research, both quantitative and qualitative methods are used together to find out how important it is for students and teachers to be able to innovate and communicate effectively. This is done so that the connection between the two can be understood. According to the study's progressive interpretation design, the numeric data is given more weight than the other two methods used in the explanation part of the study**.**(Vosloo, Vosloo, & Antonites, 2018)

Sampling Technique: The probability cluster and non-probability convenience sampling methods will be used in this study to get information about the respondents from two different sources. The senior students' professional departments and entrepreneurship centres at their university used a questionnaire as the probability sampling method for these students. For the semi-structured talks, convenience technology picks a different major student, the teacher of the business project, or the winner of the entrepreneurship challenge. There are a total of 15726 senior (Years 3–4) pupils at the 3 universities that were chosen. Yamane (1967) gives a simpler way to figure out group numbers. It is assumed that P = 5% and that the confidence level is 95%. The sample size is n, the population size is 15726, and the amount of accuracy is e. The sample size for this study is found by using this method on the above sample: n = N /[1+Ne2]. This gives us the sample size of 394 respondents.

Scale Measurement: Before doing large-scale quantitative research, a test study was done to see how reliable scale measures were when they were checked for structural internal consistency. After exploratory factor analysis, some items were taken out of the first scale. To make sure that the revised innovation capability scale (Churchill, 1979) worked with a more independent and diverse sample, this study used Smart PLS 3.0 software to do confirmatory factor analysis (CFA) on the scale.

Data Analysis

The mixed-methods research design of this study led to a thorough data analysis approach that emphasized quantitative results and backed them up with qualitative insights.(Vosloo et al., 2018) We analyzed the data in two steps: first, we did a quantitative analysis using inferential statistics and structural modeling; second, we did a qualitative analysis using topic coding and triangulation.

Quantitative Data Analysis

We used descriptive statistics like means, standard deviations, and rates to make a summary of the 394 student respondents' traits and give a basic outline of the dataset (Wyatt, 2018)These tests made it easier to get a general idea of what the sample was made of. During the test phase, exploratory factor analysis (EFA) was used to check the structural validity of the creativity capability scale (Churchill & Bygrave, 1990)before collecting big amounts of data. To make the device more reliable, things with low factor loadings were taken out. After that,

SmartPLS 3.0 software was used to do confirmatory factor analysis (CFA) to make sure the new scale was correct. To make sure there was internal consistency, important validity measures like Cronbach's alpha, average variance extracted (AVE), and composite reliability (CR) were measured.

We used structural equation modeling (SEM) with the partial least squares (PLS) method to look at the links between teaching students how to be entrepreneurs and their ability to come up with new ideas. We looked at path coefficients, coefficient of determination (R^2), predictive relevance (Q^2), and effect sizes (f^2) to see how strong and important the model. Independent samples t-tests were used to find differences between subgroups (like gender or field), and analysis of variance (ANOVA) was used to find changes between schools. The level of statistical significance was set at $p < .05$.

Qualitative Data Analysis

Faculty members, winners of a startup competition, and senior business students were interviewed in a semi-structured way to get qualitative data. Thematic coding was used to look at the transcripts and find important themes like "student motivation," "learning environment," "pedagogical challenges," and "innovation barriers." Thematic patterns were found by induction and put together using code cycles to make things clearer and more in-depth. Triangulation was used to improve the reliability and accuracy of the research by comparing themes that came up in the qualitative data with trends that came up in the numeric data. This made sure that views were backed by a number of different data sources, which improved the internal validity of the study.

Depending on how complicated the story data was, NVivo software and Microsoft Excel were used to organize the data and map out the codes.

Results

Table 1

Summary of Data Analysis Techniques and Tools

Stage	Method/Tool	Purpose	Software Used
Descriptive Statistics	Means, SD, Frequencies	Summarize demographic characteristics	SPSS / Excel
EFA (Pilot Study)	Factor Loadings, KMO, Bartlett's Test	Validate initial construct structure	SPSS
CFA	CR, AVE, Cronbach's Alpha	Confirm internal consistency and validity	SmartPLS 3.0
SEM	Path Coefficients, R^2, Q^2, f^2	Test model fit and predictive relevance	SmartPLS 3.0
t-test / ANOVA	Inferential Statistics	Identify significant group differences	SPSS
Thematic Analysis	Open and Axial Coding	Extract and categorize themes from interviews	NVivo / Excel

Stage	Method/Tool	Purpose	Software Used
Triangulation	Quant-Qual Cross Comparison	Validate integrated findings from different methods	Manual Interpretation

Conclusion

This study shows that to teach business skills effectively, we need to go beyond standard ways of teaching and focus on active, hands-on, and student-centered methods. Using new ways of teaching and learning, like project-based learning, digital tools, and mentoring, greatly improves students' ability to come up with new ideas and desire to be entrepreneurs. But actual success depends a lot on things like institutional backing, how ready teachers are, and the tools that are available. The mixed-methods results show how important it is to have a flexible, competency-based program that helps students with a range of learning needs and encourages them to think of new ways to solve problems. Since higher education is always changing, combining business material with new ways of teaching is becoming a must. This is important for both making graduates more employable and helping the economy and society grow as a whole. More study needs to be done on the long-term effects of these kinds of educational methods in a variety of academic and regional settings.

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