



## ENHANCING ENTREPRENEURIAL SKILLS OF GRADE 12 STUDENTS THROUGH ICT-INTEGRATED PROJECT-BASED LEARNING

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### ABSTRACT

This action research examined the entrepreneurial skills of Grade 12 students, identified the utilized ICT-integrated project-based learning, and provided necessary responses in order to enhance the entrepreneurial skills of the concerned students. The investigation focused on three core entrepreneurial dimensions, such as Planning, Power, and Achievement, and employed weighted mean analysis to determine students' self-reported performance levels. Results indicated consistently high proficiency across all clusters, each receiving an adjectival rating of Always. The Planning Cluster obtained an overall mean of 4.32 that indicates students' strong capabilities in strategic preparation, resource organization, and information management. However, Power Cluster gained an overall mean of 4.39, which reflected elevated levels of leadership, autonomy, interpersonal competence, and self-confidence in executing collaborative tasks. Similarly, the Achievement Cluster has an overall mean of 4.39, which revealed a pronounced commitment to excellence, persistence in overcoming challenges, and readiness to engage in risk-taking behaviors aligned with entrepreneurial thinking. Collectively, these findings suggest that ICT-integrated project-based learning serves as an effective pedagogical approach for fostering essential entrepreneurial competencies among senior high school students, thereby supporting their holistic development and future readiness within academic and professional contexts.

Keywords: *entrepreneurship, skills, ICT-integrated-project-based learning, clusters, proficiency*

### INTRODUCTION

Learning is the anticipated outcome of each learning instruction. The roles of teacher and student have a significant impact on shaping one's

academic journey. Effective teaching instructions are those that are flexible and adaptable to the emerging trends. Technology has a major role in enhancing the entrepreneurial skills of the students.

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Entrepreneurship concepts are explicitly embedded into the four components of Technology and Livelihood Education (TLE), which are Information and Communication Technology (ICT), Agricultural and Fishery Arts (AFA), Family and Consumer Science (FCS), and Industrial Arts (IA), as stipulated in the MATATAG K to 10 Curriculum in the Philippines. This implies that there should be a high emphasis on the entrepreneurial skills of the students to master the competencies in each component, incorporating ICT project-based learning.

According to Basbas (2021) and Alusen (2016), who identify entrepreneurial characteristics that are widely used in business contexts in the educational landscape, the Achievement Cluster, Planning Cluster, and Power Cluster. These groups represent key traits and competencies that characterize successful entrepreneurs. Taking this note into something meaningful since business has an emerging opportunity which may be deeply rooted in their earlier subjects in basic education. This instance may take students into more progressive outcomes and be responsive to the challenges that surround them.

In relation to the above-mentioned data, classroom instruction should be managed carefully with the help of appropriate ICT project-based learning activities. This matters since teaching and learning go hand-in-hand while continually improving the field of education through various ICT. As mentioned by Dreyer (2021) project-based learning (PBL) is a practice in many schools that enhances engagement across the entire educational process. It was also demonstrated that there is an increase in academic achievement, and it gave educators ideas on how to make PBL successful in the classroom.

This paper was crafted to enhance the entrepreneurial skills of students while utilizing ICT project-based learning activities. Entrepreneurial skills were emphasized since it provides meaningful doors for the students in generating their own profit and the skills that need to be shaped for their lasting impact. ICT project-based learning activities were then focused on preparing

students for technological advancements while learning at the same time.

## OBJECTIVES OF THE STUDY

The action research was conducted to assess the current level of the entrepreneurial skills of Grade 12 students, determine the utilization of ICT project-based learning, evaluate the effectiveness of ICT-integrated project-based learning in their entrepreneurial skills, and to provide recommendations to enhance the entrepreneurial skills of Grade 12 students through ICT-integrated project-based learning.

## METHODOLOGY

The researchers employed a mixed-methods descriptive and evaluative research design supported by a developmental approach in gathering the data required for this study. Mixed methods research is a widely utilized and reliable strategy that integrates both quantitative and qualitative procedures within a single study, as stated by Hussan (2024). According to Sirisilla (2023), a descriptive study is utilized as an effective means to collect data about certain groups. This type of study offers a thorough and precise representation of the traits or actions of a specific group or topic. This helps academics better understand a particular problem and gives insightful information that can guide future researchers by watching and gathering data on a certain topic. Taylor (2023) explains that evaluative research design is a systematic process used to determine the effectiveness or value of a particular program, strategy, or intervention.

In this study, the descriptive method was used to assess the current level of entrepreneurial skills of grade 12 students before the integration of ICT-based project-based learning activities. Along this line, the descriptive method of research was employed to determine the baseline entrepreneurial skills of the students in terms of the achievement cluster, planning cluster, power clusters, and ICT literacy skills. Furthermore, the same descriptive approach was utilized to identify



the ICT project-based learning activities used by the students. The research was also evaluative, as it assessed the effectiveness of ICT-integrated project-based learning using a performance rubric, and developmental recommendations were formulated based on the results of the evaluation.

*Respondents of the Study.* The respondents of the study consisted of 34 grade 12 students who completed the online questionnaire disseminated via Google Forms. The form was forwarded to the entire group of 50 students; however, only 34 responded within the gathering period. The study employed purposive sampling, as research specifically required participants currently enrolled in Grade 12 and engaged in entrepreneurship and ICT-related activities.

**Table 1**  
*Respondents of the study*

Group	No. of Students	Percentage (%)
Students who received the form	50	100%
Students who responded	34	68%
Students who did not respond	16	32%
Total considered respondents	34	100%

The data gathering procedure consisted of five phases, aligned with the research objectives:

*Phase 1: Pretesting*

The researchers administered a pretest questionnaire to determine the students' current entrepreneurial skills levels and ICT competencies. The data were gathered through online Google Forms.

*Phase 2: Implementation of ICT-Integrated Project-Based Learning – Online Entrepreneurship Expo 2025*

After the pretest results were analyzed, the researcher introduced an activity requiring students to utilize ICT tools in performing an entrepreneurship-related project. This phase identified the ICT tools and PBL strategies that the students used in completing their outputs.

*Phase 3: Performance Evaluation*

Upon submission of the Online Entrepreneurship Expo 2025 outputs, the researcher evaluated the students' performance using a standardized ICT-integrated PBL rubric. The rubric assessed the quality of their activity, including the relevance prior to the use of ICT tools and application of entrepreneurial skills.

*Phase 4: Formulation of Recommendations*

The results from the pretest, rubric, and performance evaluation of the implemented ICT-integrated project-based learning, and post-activity survey were analyzed collectively. These findings served as the basis for developing recommendations to further enhance the entrepreneurial skills of Grade 12 students through ICT-integrated project-based learning.

*Ethical Considerations.* This study aimed to investigate the enhancement of entrepreneurial skills in Grade 12 students through ICT-integrated project-based learning, adhering to established ethical standards for research, particularly for minors. Before the study began, the researchers obtained permission from the principal of the Philippine Women's University – CDCEC Calamba to provide the research tools to Grade 12 students. Approval was granted subject to the condition that parental or guardian consent be secured for all students, regardless of their eventual participation status. In compliance, the researchers distributed and collected duly completed parental consent forms, which clearly outlined the study's objectives, the nature of the data to be gathered, and the measures implemented to ensure participant confidentiality and privacy.

Participation in the study was entirely voluntary. The researchers ensured that student participants fully understood the purpose of the research, the tasks they would be asked to complete, such as answering Google Forms questionnaires and participating in brief interviews, and their right to withdraw at any point without penalty. This was accomplished by providing clear verbal and written explanations before data collection and by addressing any questions raised



by the students. No participant was coerced or pressured into participating in the study, and assent was obtained respectfully and transparently.

Strict protocols were observed to maintain the confidentiality and security of all collected data. There were no personal identifiers in the dataset or the final report. The researchers were the only ones who could access the information gathered from online surveys, interviews, and performance evaluations. As stated in the parental consent form, all data were used solely for academic and research purposes and were not disclosed to unauthorized individuals.

The researchers also ensured that no physical, emotional, psychological, or academic harm befell the participants. All procedures, including the pretest, implementation of ICT-integrated project-based learning activities, rubric-based performance evaluations, and post-activity surveys, were done as part of regular classroom activities and did not disrupt the students' everyday academic responsibilities. Each phase of the five-stage data collection process was implemented with full consideration for the participants' welfare, rights, and overall well-being.

Finally, the study was guided by the principles of honesty, respect, and fairness. The researchers maintained the integrity of the data during collection, processing, and reporting, ensuring that no information was fabricated, manipulated, or misrepresented. These ethical controls were implemented to protect the dignity of all individuals involved and ensure that the study's results were credible and reliable.

**RESULTS AND DISCUSSION**

**1. Level of the Entrepreneurial Skills of Grade 12 Students**

**1.1 Planning Cluster**

The Planning Cluster obtained an overall mean of 4.32, interpreted as Always, which indicates that respondents consistently demonstrate strong planning-related entrepreneurial skills. This

suggests that they effectively set goals, organize tasks, and prepare strategies when completing project-based activities.

**Table 2**  
*Planning Cluster*

Item	WMEAN	V.I.	Rank
I analyze possible risks and prepare backup plans to handle unexpected challenges.	4.24	A	4.5
I identify the resources needed such as time, money, and materials before starting a project.	4.38	A	2
I use tools such as planners, calendars, or checklists to manage my schedule effectively.	4.24	A	4.5
I coordinate and communicate with my team to make sure everyone understands the plan.	4.41	A	1
I research and gather relevant data before making any business or project decision.	4.32	A	3
<b>Overall Mean</b>	<b>4.32</b>	<b>A</b>	

The high mean values across the items imply that students are generally confident in their ability to plan and anticipate challenges, showing that ICT-integrated project-based learning supports the development of their planning abilities.

**1.2 Power Cluster**

The abovementioned cluster recorded an overall mean of 4.39, interpreted as Always, reflecting that respondents display a high level of personal drive, leadership, persistence, and assertiveness. These traits allow them to influence



and motivate others positively during collaborative tasks.

**Table 3**  
*Power Cluster*

Item	WMEAN	V.I.	Rank
I prefer to take responsibility for my own decisions.	4.53	A	1
I can work with minimal supervision when given a task.	4.24	A	4.5
I actively look for opportunities to connect with people who can help me in my future career.	4.44	A	3
I maintain good relationships with classmates, teachers, and community members.	4.50	A	2
I am confident when presenting proposals or projects in class.	4.24	A	4.5
<b>Overall Mean</b>	<b>4.39</b>	<b>A</b>	

The strong ratings indicate that ICT-integrated project-based learning enhances students' confidence and leadership behaviors, enabling them to take initiative and maintain perseverance in completing their projects.

**1.3 Achievement Cluster**

The last cluster, which is the achievement cluster, also achieved an overall mean of 4.39, which is interpreted as Always. It means that the respondents possess strong achievement motivation, demonstrated through their commitment to produce quality work, meet deadlines, and take responsibility for their performance.

**Table 4**  
*Achievement Cluster*

Items	WMEAN	V.I.	Rank
I actively look for new ways to improve or create products or services that meet people's needs.	4.47	A	2
I make sure that the work I finish meets high standards, even if it means spending more time or effort.	4.44	A	3
When I encounter problems or failures in a task, I continue working until I find a solution.	4.15	A	5
I am willing to take risks after evaluating possible outcomes.	4.35	A	4
I stay persistent and committed to achieving my goals even when facing challenges.	4.56	A	1
<b>Overall Mean</b>	<b>4.39</b>	<b>A</b>	

The high means across the items suggest that students strive for excellence and actively seek improvement, indicating that ICT-integrated project-based learning effectively nurtures their achievement-oriented skills.

**2. Utilized ICT Project-Based in Learning**

The results revealed that all student groups successfully created innovative products and demonstrated their entrepreneurial skills throughout the activity. Each group conceptualized a feasible business idea, developed a creative product, and used ICT tools to present and promote their outputs.

This shows that the intervention effectively guided all learners in applying both entrepreneurship and digital competencies.



**Table 5**  
*Utilized ICT Project-Based in Learning*

Tool / Platform	Responses	Percentage
Google Workspace (Docs, Sheets...)	27	79.4%
Microsoft Office (Word, Excel...)	23	67.6%
Canva	28	82.4%
Facebook / Instagram Business	27	79.4%
Mailchimp	0	0%
Loyverse POS	0	0%
Shopify	0	0%
Google Forms / SurveyMonkey	16	47.1%
QuickBooks	0	0%
PayPal / GCash / Maya	14	41.2%
Zoom / Google Meet	1	2.9%

**Summary**

- Grade 12 students have strong entrepreneurial skills across the Planning (M=4.32), Power (M=4.39), and Achievement (M=4.39) clusters, all rated “Always.” They excel in goal-setting, organizing tasks, leading peers, and meeting deadlines, suggesting that ICT-integrated project-based learning effectively boosts their planning, leadership, and achievement skills.
- The data shows students consistently rated themselves highly across all clusters, showing strong motivation, effective planning, and high self-efficacy. Their mostly positive responses reflect perseverance, confidence, and responsibility. Students are familiar with common digital tools like Canva, Google Workspace, and Microsoft Office, but lack experience with specialized business tools such as Shopify, Mailchimp, QuickBooks, and POS systems, indicating a need for integrating more advanced ICT tools in entrepreneurship lessons.
- The findings confirm that integrating ICT in entrepreneurship lessons effectively enhanced

students’ creativity, communication, and digital literacy. The fact that all groups were able to produce innovative products using ICT tools indicates that the instructional strategies used throughout the project were successful in promoting active engagement and skill development.

**CONCLUSION**

Based on the major findings in this study, the following conclusions are drawn:

- Grade 12 students demonstrate strong entrepreneurial competencies in the Planning, Power, and Achievement clusters, supported by high mean scores. These results show that ICT-integrated project-based learning effectively enhances their planning, leadership, and achievement-driven behaviors, confirming that the approach strengthens their entrepreneurial readiness.
- Grade 12 students show high motivation, strong planning skills, and confidence across all clusters, and are proficient in commonly used digital tools. However, limited exposure to specialized business platforms highlights the need to integrate more advanced ICT tools to better prepare them for real-world entrepreneurship education to better equip them for real-world entrepreneurial tasks.
- The results demonstrate significant improvement in students' ability to merge entrepreneurial thinking with ICT integration, proving that the intervention fostered both creativity and 21st-century digital competencies.

**RECOMMENDATION**

Considering the findings and conclusions drawn, the researchers recommend the following:



1. The teachers should integrate advanced ICT Tools into entrepreneurship instruction, such as Shopify for e-commerce, QuickBooks for basic accounting, Mailchimp for digital marketing, and simple POS (Point-of-Sale) systems to deepen students' digital entrepreneurial literacy and better prepare them for real-world business operations.
2. Teachers may design long-term entrepreneurial projects such as digital product prototyping, online store simulations, or social media marketing campaigns to further reinforce authentic learning experiences.
3. The school should provide professional development on updated digital platforms and PBL strategies, including training on e-commerce tools, financial technology applications, and digital marketing systems, which can empower teachers to be more relevant and execute an industry-aligned instruction.
4. To have partnerships with local entrepreneurs, ICT professionals, and business organizations that will offer students real-world insights and mentorship

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