International Journal of Linguistics and Translation Studies
Volume 6, Issue 1, 2025
Homepage: http://ijlts.org/index.php/ijlts/index
DOI: https://doi.org/10.36892/ijlts.v6i1.538

Project-Based Learning and Students' Content Achievement: Second Baccalaureate Students as a Case Study

Abdessallam Khamouja
Ibn Tofail University, Faculty of Arts and Humanities, Morocco
abdessallam.khamouja@uit.ac.ma

How to cite:
Khamouja, A.(2025). Project-Based Learning and Students' Content Achievement: Second Baccalaureate Students as a Case Study. *International Journal of Linguistics and Translation Studies* 6(1).29-40. https://doi.org/10.36892/ijlts.v6i1.534

ARTICLE HISTORY
Received: *10/11/2024*
Accepted: 21/01/2025

Keywords:
Project-based learning and students' content achievement.

Abstract

Students' achievement refers to the extent to which learners have acquired their short- or long-term educational goals. Good academic achievements allow students to enhance the necessary knowledge and practical skills they will need in their future schooling. This pushes second-year teachers to rely on modern teaching methods in their teaching process, such as project-based learning, to make their students successful in their learning. Therefore, the present study is conducted in a Moroccan high school, using a quasi-experimental research design to find out the extent to which the PBL helps students in learning the content of English successfully. Forty high school students studying English at the second-year baccalaureate level participated in the experiment. They were divided into the experiment and control groups. The experimental group was given a project to conduct, and the control group started studying Unit 4 of the Ticket 2 English Textbook, which was about sustainable development. The findings indicate that there is a significant difference between the means of the experimental and control groups after the experiment. Consequently, it is suggested that teachers should adopt project-based learning in their teaching process to help students learn the subject content successfully.

1. INTRODUCTION

There are various teaching methods and strategies a teacher can use to create a welcoming learning environment where all students eagerly participate and construct knowledge in the learning process (Chafi et al., 2014**)**. That is, when motivating teaching strategies are used, students' ways of learning become more productive and creative, which, in turn, can increase their learning efficacy. Project-based learning is among the teaching methods that are believed to increase students' creativity and achievement in learning (Cayubit, 2022). In other words, this learning method is considered a natural extension of what is already taking place in class (Xiaomi, 2016). It gives learners a chance to invest their prior knowledge to create more knowledge about a certain topic or problem, which can help them reach the desired goals successfully (Chafi et al., 2014**)**. Therefore, the main purpose of this study is to explore the extent to which the project-based learning method can help students perform better in the learning process and acquire the subject content without difficulties.

1.1.Research Questions

The current study addresses the following research questions :

- Is there any significant difference between the means of the experimental and control groups before the experiment?
- Is there any significant difference between the means of the experimental and control groups after the experiment?

1.2.Research Hypotheses

- There is a significant difference between the means of the experimental and control groups before the experiment.
- There is a significant difference between the means of the experimental and control groups after the experiment.

2. REVIEW

Academic achievement plays a crucial role in a student's educational journey and beyond (Cayubit, 2022). It serves as a measure of progress in terms of knowledge and skills that open doors for higher education and provide opportunities for personal growth (Anwer, 2019). In this context, achievement is defined as the knowledge or practical skills **s**tudents develop in a certain subject depending on themselves, usually determined by test scores or marks assigned by teachers or both. It is about the desired goals the teacher wants his/her students to reach at the end of a lesson or a textbook unit (Cayubit, 2022). It is also defined as the outcome gained from the interaction between students and the subject matter (Hemwati & Bhardwaj, 2014). This requires teachers to use modern teaching methods and strategies to create a welcoming learning environment where all students eagerly participate in the learning process (Chafi et al., 2014**)**. That is, when motivating teaching strategies are used, students' ways of learning become more successful, which can increase their learning efficacy. Based on the review of the literature, project-based learning is among the teaching methods that are believed to help learners reach their desired goals successfully because it is a modern teaching method that gives learners the chance to acquire knowledge and practical skills over a long or medium period and resolve a real-world problem depending on themselves (Wurdinger et al., 2007)

.

2.1.Project-Based Learning Definitions

Project-based learning is defined as a student-centered method where educators help and guide learners through the process of solving problems. This includes finding a problem, developing a strategy or plan to solve it, implementing the plan, reflecting on the plan while completing the project, gathering and analyzing data, drawing conclusions, and reporting findings (Choo, 2007). This innovative learning method makes students active in their learning through a structured process aimed at solving a problem (Cayubit, 2022). It gives students a great chance to apply their prior knowledge to solve real-life problems (Du Toit et al., 2016). Al-Balushi & Al-Aamri (2014) consider project-based learning an inquiry-based teaching method (IBT) that offers a chance for educational reform where learners are provided with a real learning environment that contains authentic problems within real-world practices. It reflects an inclusive learning context where students use different disciplinary concepts and experiences to find answers to authentic problems. Moreover, project-based learning is recognized as a progressive, active-learning, and student-centred method that allows students to acquire content and skills over a long or medium period and resolve a real-world problem (Wurdinger et al., 2007).

2.2.Essential Elements of Project-Based Learning

Project-based learning is a student-centered learning method where learners are allowed to construct knowledge in an authentic context (Anwer, 2019). To explain, project-based learning is an inquiry-based teaching method (IBT) that offers a chance for educational reform where learners are supplied with a real learning environment that consists of authentic problems

within real-world practices. This modern learning method necessitates some conditions and components to help learners achieve their goals without difficulties, such as a challenging problem, authentic context, students' voice and choice, and reflection (Alkhatnai, 2017).

1.1.1. A Challenging Problem/Question

The project problem or question is one of the main components of a project. It can either make the project process motivating or boring. For example, if a teacher helps his students create a compelling and workable question or problem that meets their needs, the project process will motivate them. They will do their best to find a solution to the project question or problem (Anwer, 2019). So, the teacher needs to start a debate about a topic related to the textbook's content. Then, he/she should ask his students a variety of directed and open-ended questions about what they have studied and how that can be related to their local environment (Barrows, 2000). The teacher should write all the students' answers on the board. Then, with the collaboration of their teacher, students can use what they have studied to develop a project problem related to their local environment. This can help students apply the knowledge they receive in the classroom to solve problems in an authentic context (Alkhatnai, 2017).

1.1.2. Learning Place/Context

Project-based learning involves real-world contexts where students can use prior knowledge to construct new knowledge (Blumenfeld et al., 1991). An authentic learning context is relevant when one needs to learn something behind the classroom door. It occurs in a realistic world. It is external and independent of the learner and the activities in which the learner is engaged. It is, thus, seen as the open space that shapes both teachers' and learners' behavior during the learning process (Cayubit, 2022). It liberates students from traditional learning, where they passively receive abstract knowledge. It makes them active learners who are engaged in solving authentic problems in an authentic context (Huang et al., 2019).

1.1.3. Students Voice and Choice

Project-based learning allows students to be the leaders of their learning process and choose the most suitable project problems and learning strategies to achieve the desired goals (Brinia, 2009). In other words, while implementing project-based learning, students are given a chance to choose the type of project problem they see as motivating and workable (Cayubit, 2022). The teacher also lets students choose the most suitable learning strategies and materials to help them solve the project problem (Chaibi & Hassim, 2008). This can make students think that they can choose what to learn and how to learn it, which is motivating for them (Kolb & Kolb, 2011).

1.1.4. Reflection

Reflection is one of the main components of project-based learning (Cayubit, 2022). Since reflection is a systematic review process, a well-designed project includes structured time for reflection (Choo, 2007). The reflection stage allows students to rethink the learning strategies and materials they rely on to achieve the desired outcome (Keblawi, 2009). It helps them make the necessary project adjustments so that they can reach valid results and conclusions (Kwon et al., 2014).

Based on the review of the literature, it is concluded that teaching methods are the essential factors teachers should emphasize to improve students' achievement in the learning process (Cayubit, 2022). That is, educators should use different teaching methods, such as project-based learning, to create a welcoming and motivating learning environment where

learners can successfully reach the desired goals because teaching methods can either increase students' achievement in the learning process or decrease it (Farrington, Roderick, et al., 2013).

3. METHODOLOGY

Research methodology is about the procedures relied on to select, process, and analyze information about a topic (Kothari, 2004). It is a structured and scientific approach used to collect, analyze, and interpret data quantitatively or qualitatively to answer research questions (Sreekumar, 2023). The procedures below are followed to answer the research questions.

3.1.Research Design

According to McMillan & Schumacher (2010:22), "the research design describes how the study is conducted, and the purpose of a research design is to indicate a plan that will generate evidence that will be able to answer the research questions." The present study is based on a quasi-experimental research design to explore if there is any significant difference between the means of the experimental and control groups before and after the experiment at the second-year baccalaureate level.

1.1.5. Research Sample

The researcher of the present study created a group of forty students from five classes of second-year baccalaureate level, using the convenience sampling technique, a non-random sampling type. They were studying at Kacem Amine High School in Dar Belamri, a small village.

1.1.6. Research Instruments

The pre-test and the post-test are used in the current study as the main tools for data collection to answer the research questions quantitatively. They are meant to collect data on students' content achievement when given a project activity to conduct.

1.1.7. Data Collection Procedure

Data collection is about collecting, measuring, and analyzing data for research using standard techniques (Ghaicha, 2016). The methods of data collection differ for different fields of study, depending on the needed information (Asher, 1993). Data collection for the present study has gone through some stages.

1.1.7.1.Pre-Test for the Experimental and Control Groups

The participants are divided into the experimental and control groups. The two groups are exposed to a pre-test separately. The main aim of the pre-test is to measure what students were like before the intervention. The pre-test contains five questions related to a sustainable environment. Students have to answer each question by choosing the correct answer option. The content of the pre-test questions is about pollution issues and their effect on health and the environment because Unit 4 of the textbook is about sustainable development. The test is scored out of 20, with four marks for each correct answer. Students are asked to answer the questions in fifteen minutes without writing their names on the answer sheets to keep their answers confidential. After the pre-test, the control group started studying Unit 4 of the Ticket 2 English textbook in the classroom for four weeks. Unit four of the textbook is about sustainable development. It targets different issues, such as climate change, pollution, threats to public health, deforestation, responsible consumption and production, economic inequality, waste production, clean environments, and cheap energy storage. The focus in the current study was on two issues, which are pollution and threats to public health.

1.1.7.2.Project-Based Learning Implementation for the Experimental Group

The project of the current study is entitled "EcoDream." It is a five-week project. During the first week, the experimental group participants were introduced to both project-based learning and the goals of Unit 4 of the textbook. In the second week, the researcher of the present study worked with the participants to develop a project problem based on pollution and threats to public health issues. The project problem was in the form of a question, which is, 'What is the effect of trash output and gasoline use on health and the environment in Sidi Slimane City?'. Then, both the researcher and the participants worked together to develop a plan for the project by creating roles for students in the experimental group, setting a project timeline, and choosing the places to visit and materials to use to collect data. In the third and fourth weeks, the participants conducted the project activities to collect data about the project problem. In the fifth week, the participants presented their final product in the classroom. After that, both the teacher and his students evaluated the project outcome and the project process.

1.1.7.3.The Control Group Post-Test

After finishing Unit 4 of the Ticket 2 English textbook in four weeks, the control group was subject to a post-test. The same pre-test procedures were followed in the post-test administration. It included ten questions with three answer options for each question. These questions were about the issues the participants tackled in the classroom, such as pollution, threats to public health issues, and environmental problems. The allotted time for the test was half an hour. Students were asked not to write their names on the answer sheets to keep their answers confidential.

1.1.7.4.The Experimental Group Post-Test

The participants in the experimental group were subjected to a post-test so that the researcher of the present study could know if there had been any change after the experiment. The post-test included ten questions about the issues students dealt with in the project task. Students were asked not to write their names on the answer sheets to keep their answers confidential.

1.1.8. Data Analysis Procedure

The t-test is used to measure if the means of the experimental and control groups are different. It helps to show the significance of the results. The significance level is measured by using the p-value, which is a number varying between 0 and 1. A p-value of ($p = .05$) and less demonstrates that the alternative hypothesis is accepted. A p-value of more than ($p = .05$) shows that there is strong evidence in favor of the null hypothesis, and thus, it is accepted (Shuttleworth, 2008).

4. DATA DESCRIPTION, ANALYSIS, AND RECOMMENDATIONS

Project-based learning is recognized as a progressive, active-learning, and student-centered method that allows students to acquire knowledge and skills over a long or medium period and resolve a real-world problem (Wurdinger et al., 2007). It helps learners be motivated in their learning process because they participate in constructing knowledge, which they easily call back during the examination period (Zhang, 2007). Therefore, the means of the experimental and control groups in the present study are measured before and after the experiment to find out if they are significantly different.

4.1.Evidence for Pre-Test and Post-Test

Reliability is the extent to which the instrument produces stable and consistent results (El Ghouati, 2018). In other words, if the results are consistent, the measuring instrument will be considered reliable (Trochim, 2006). Cronbach's alpha coefficient is calculated in the pre-test and the post-test to estimate internal reliability. The value of Cronbach's alpha obtained for the total items in the pre-test is α=. 691, and the value of Cronbach's alpha obtained for the total items in the post-test is α=. 613. This signifies that the pre-test has acceptable internal consistency.

1.2.The Experimental and Control Groups Pre-Test Comparison

The t-test is used to compare the means of the experimental and control groups after the pre-test to answer the research question of whether **there is a significant difference between the means of the experimental and control groups before the experiment**. The results are shown below.

Table 1: T-test Findings of the Pre-test about the Experimental and Control Groups

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
Experimental group pre-test	20	4,20	3,778	,845
Control group pre-test	20	4,40	4,285	,958

As stated in Table 1, the means of the experimental and control groups are slightly different. The mean of the experimental group is 4, 20, whereas the mean of the control group is 4, 40. Thus, the pre-test results indicate that there is a slight difference between the means of the two groups for the control group. The one-sample test table (2) below describes the significance level of the difference between the means of the two groups.

Table 2: One Sample Test Findings

One-Sample Test

	Test Value = 20						
			Significance		Mean	95% Confidence Interval of the Difference	
	t	df	One-Sided p	Two-Sided p	Difference	Lower	Upper
Experimental group pre-test	-18,703	19	<,001	<,001	-15,800	-17,57	-14,03
Control group pre-test	-16,283	19	<,001	<,001	-15,600	-17,61	-13,59

The difference between the experimental and control groups is statistically significant for the control group. According to the one-sample t-test results (Table 2), the p-value is less than 0.05. Hence, the hypothesis, which predicts that there is a significant difference between the means of the experimental and control groups before the experiment is accepted.

The Experimental and Control Groups Post-Test Comparison

The means of the experimental and control groups were also compared in the post-test to answer the research question of whether **there was a significant difference between the means of the experiment and the control groups after the experiment.** The t-test was used to compare the means of the two groups. The tables (3 and 4) below give descriptive statistics about the experimental and control groups after the experiment.

Table 3: The Post-Test Descriptive Statistics about the Experimental and Control Groups

Group Statistics

	control groups and experimental group	N	Mean	Std. Deviation	Std. Error Mean
Results	experimental group	20	16,450	1,5381	,3439
	countroul group	20	11,200	1,6416	,3671

As has been discussed before, the pre-test findings showed that there was a slight difference between the means of the experimental and control groups in favor of the control group. However, the post-test findings demonstrate that there is a big difference between the means of the two groups. This time, the difference is in favor of the experimental group. To explain, as stated in Table 3, the mean of the experimental group is 16.450, whereas the mean of the control group is 11.200.

Table 4: Independent Samples Test Findings

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Results	Equal variances assumed	,000	,985	10,437	38	<,001	5,2500	,5030	4,2317	6,2683
	Equal variances not assumed			10,437	37,840	<,001	5,2500	,5030	4,2316	6,2684

According to the one-sample t-test results (Table 4), the p-value is less than 0.05. This shows that the difference between the means of the experimental and control groups is significant. Accordingly, the findings are in favor of the hypothesis stating that there is a

significant difference between the means of the experimental and control groups after the experiment.

The results of the present study are in line with the literature, which considers that project-based learning positively affects students' achievement. According to Kwietniewski (2017), project-based learning promotes achievement because it allows students to be responsible for their learning and engages them in investigating real-world problems. To explain, project-based learning can stimulate students' learning enthusiasm, increase their motivation, and develop collaborative learning. Besides, a major advantage of project-based learning is its opportunity for differentiation and scaffolding, which are considered the key enablers for students' achievement. These opportunities allow teachers to meet the needs of their students and create a motivating environment for learning (Efstratia, 2014). Additionally, Cayubit (2022) and Al-Balushi & Al-Aamri (2014) consider project-based learning an inquiry-based learning method that offers a chance for educational reform where learners are provided with a real learning environment that contains authentic and motivating problems within real-world practices. It reflects an inclusive and motivating learning environment where students use different disciplinary concepts and experiences to find answers to authentic problems. Moreover, project-based learning is recognized as a progressive, active-learning, and student-centered method that motivates students to acquire knowledge and skills over a long or medium period and resolve a real-world problem (Wurdinger et al., 2007). To clarify, learners are involved in constructing knowledge to successfully and collaboratively perform a project problem because project-based learning is a learning method that encourages collaboration in which all learners are motivated to participate in the shared outcome (Kokotsaki et al., 2016). The outcome of the current research is also supported by the previous studies (Walter (2016), Aksela & Haatainen (2019), Zhang (2007), Mario & Callum (2019), Stewart (2007), Boudersa (2015), Noorah (2017), Elsafty, Elsayad, & Shaaban (2020), Parisa & Taghi (2016), Zaman (2018), and Alkhatnai, 2017). These studies found that project-based learning promotes students' achievement in the learning process because it has a significant impact on students' readiness for self-directed learning. Therefore, to successfully implement project-based learning, both teachers and students should follow certain steps and advice (Harmer, 2014). Teachers should incorporate an embedded project problem that arises from student brainstorming into the design of the project-based activity. They should also engage in real-world problems that align with the textbook's content. From time to time, they should monitor their students to check whether they have clearly tackled the project problem and whether all group members participated meaningfully. Concerning students, they should actively participate in developing the project problem and constructing a plan for the project through choosing group roles, sitting the timeline for the project, and choosing materials to use and places to visit to collect data (Kahn & O'Rourke, 2004).

To implement project-based learning in the teaching process, teachers should follow some steps. Students, with the help of their teacher, choose the project topic and become sensitized about it, aiming to arouse interest and develop a climate conducive to speculation and investigation that will lead smoothly to the research process. The second stage is about assigning roles to the members of the group and making decisions concerning methodology, sources of information, activities that will take place, and places outside the classroom that students will visit. The third stage is about putting the project activities into practice. At this stage, the groups implement the activities that they planned at the previous stage. The fourth stage is about the synthesis and processing of the information gathered. The end products are presented in the class. Concerning the fifth stage, it is about discussing whether the initial aims and goals have been achieved, the implementation of the project, and the final products.

All in all, implementing teaching methods that motivate learners to use the textbook content, take responsibility for their learning, and collaborate is essential for developing their content achievement (Cayubit, 2022). Project-based learning is one of the teaching methods

that can be suitable for making students motivated for learning and having them acquire the subject content easily (Kwietniewski, 2017). It is required in the classroom to improve students' soft skills, such as higher-order thinking, collaboration, communication, research skills, creativity, and problem-solving skills (Efstratia, 2014). To explain, the main principle of project-based learning is that students are active learners; if they are allowed to explore on their own, the learning becomes entertaining, motivating, and lasting (Choo, 2007). This principle is the key to PBL, which aims to establish a positive learning environment where students actively participate in the learning process to reach the desired goals (Anwer, 2019). Therefore, teachers and students alike should adhere to specific guidelines and instructions in order to successfully implement project-based learning (Harmer, 2014).

REFERENCES

Aksela, M., & Haatainen, O. (2019). Project-Based Learning (PBL) in Practise: Active Teachers' Views of Its' Advantages And Challenges. In *Integrated Education for the Real World: 5th International STEM in Education Conference Post-Conference Proceedings* (pp. 9–16), http://hdl.handle.net/10138/304045

AlBalushi, S., & Al-Aamri, S. (2014). The effect of Environmental Science Projects on Students' Environmental knowledge and Science Attitudes. *International Research in Geographical & Environmental Education*, *23*(3), 213–227, https://doi.org/10.1080/10382046.2014.927167

Alkhatnai, M. (2017). Teaching Translation Using Project-Based-Learning: Saudi Translation. *AWEJ for translation & LiteraryStudies*, *1*(4), **DOI:** http://dx.doi.org/10.24093/awejtls/vol1no4.6

Anwer, F. (2019). Activity-Based Teaching, Student Motivation, and Academic Achievement. *Journal of Education and Educational Development*, *6*(1), http://dx.doi.org/10.22555/joeed.v6i1.1782.g502

Asher, W. (1993). The Role of Statistics in Research. T*he Journal of Experimental Education*, *61*(4), https://doi.org/10.1080/00220973.1993.10806599.

Barrows, H. S. (2000). *Problem-Based Learning Applied to Medical Education*. Southern Illinois, University Press.

Blumenfeld, C., Soloway, E., Marx, R., Krajcik, J., Guzdial, M., & Palincsar, A. (1991). Motivating Project-Based Learning: Sustaining the Doing, Supporting the Learning. *Educational Psychologist*, *26*(2), 369–398, 10.1080/00461520.1991.9653139.

Boudersa, N. (2015). Student-Centered Teaching Practices: Focus on The Project-Based Model to Teaching in the Algerian High-School Contexts. *Arab World English Journal*, pp. 25–41, http://dx.doi.org/10.37571/2021.01012.

Brinia, V. (2009). *Experiential Learning in the Subject "Organisation and Business Administration" in General upper Secondary School*. Récupéré sur [Online] Available: http://www.pi-schools.gr (April 24, 2009)

Cayubit, O. (2022). Why Learning Environment Matters? An Analysis on how the Learning Environment Influences the Academic Motivation, Learning Strategies and Engagement of College Students. *Learning Environment Research Journal*, *25*(1), DOI: 10.1007/s10984-021-09382-x

Chafi, E., Elkhouzai, E., & Arhlam, A. (2014). The Dynamics of Classroom Talk in Moroccan Primary. *International Journal of Education, 2*(5), DOI**:**10.12691/education-4-1-20.

Chaibi, A., & Hassim, H. (2008). *Leadership and Values in Language Education*. Publication of the Moroccan Association of Teachers of English (MATE), DOI: 10.1007/978-3-031-25763-6_11

Choo, C. (2007). "Activity-bBsed Approach to Authentic Learning in a Vocational Institute." *Educational Media International, 44*(3), https://doi.org/10.1080/09523980701491633.

Donnelly, R., & Fitzmaurice, M. (2005). *Designing Modules for Learning*. O'Neill, G., Dublin. *Edition).* New Age International Limited Publishers. New Delhi

Du Toit, A., Havenga, M. and Van der Walt, M. (2016), "Project-based learning in higher education: new skills set for consumer studies teacher education", *Journal for New Generation Sciences, Vol. 14, https://hdl.handle.net/10520/EJC-6ceeddff9*

Efstratia, D. (2014). Experiential Education Through Project Based Learning. *Procedia Social and Behavioral Sciences, 152*(2), 1256-1260, https://doi.org/10.1016/j.sbspro.2014.09.362.

El Ghouati, A. (2018). *Investigating E-Learning Style, Computer Attitude, Computer Use and Proficiency in English: The Department of English Studies of Meknes as a Case Study.* (Unpublished doctoral dissertation). Faculty of Letters and Human Sciences,Kenitra.

Elsafty, Elsayad, & Shaaban (2020). Educating Engineering Students in Egypt: A Stakeholders' Perspective, Using Narrative Qualitative Approach. *Journal of Education and Training, 8(8),* DOI:10.11114/jets.v8i8.4901

Farrington, R., Nagaoka, J., Camille, A., Roderick, M., Allensworth, E., Seneca, T.K., David, D., & Beechum, N. (2013). Readiness for Collages: The Role of Noncognitive Factors and Context. *Voices in The Urban Journal, 38(*2), 45–52, http://dx.doi.org/10.1177/1521025116666539

Harmer, N. (2014). *The Benefits and Challenges of Project-Based Learning*. Pedagogic Research Institute and Observatory Plymouth University.

Hemwati & Bhardwaj.2014. The Concept of Academic Achievements. *International Journal of Education and Science Research Review, 1(6),* DOI:10.1093/obo/9780199756810- 0108

Huang, R., Spector, M., & Yang, J. (2019). Learning in the Context of Technologies in Educational Technology. Récupéré sur *https://doi.org: https://doi.org/10.1007/978-981-13-6643-7_2*

Ghaicha, A. (2016). Theoretical Framework for Educational Assessment. *Journal of Education and Practice, 7*(24), https://doi.org/10.4236/oalib.1104398.

Kahn, P., & O' Rourke, K. (2004). *Understanding Enquiry-Based Learning*. Higher Education Academy. In T. Barrett, I. Mac Labhrainn, & H. Fallon (Eds.), Handbook of Enquiry & Problem Based Learning (pp. 1–12). Galway: CELT.

Keblawi, F. (2009). A Critical Appraisal of Language Learning Motivation Theories. *Journal of Education, 30*(4). Corpus ID: 146134421

Kokotsaki, D., Minzies, V., & Wiggins, A. (2016). Project-based Learning: A review of the literature. Durham University Online, 267-277, DOI: 10.1177/1365480216659733

Kolb, A & Kolb, D. (2011). Experiential Learning Theory: A Dynamic, Holistic Approach to Management Learning, Education and Development. *Récupéré sur ResearchGate: ResearchGate.DOI: 10.4135/9780857021038.n3*

Kothari, C.R. (2004). *Research Methodology: Methods & Tecniques (Second Revised Edition)* New Age International Publishers, New Delhi.

Kwietniewski, K. (2017). Literature Review of Project Based Learning. Récupéré sur *http://digitalcommons.buffalostate.edu/careereducation_theses/1*

Kwon, W., Wardrip, P., & Gomez, L. (2014). Co-design of Interdisciplinary Projects as a Mechanism for School Capacity Growth. *Improving Schools Journal, 17*(1), https://doi.org/10.1177/1365480213519517

Mario & Callum, (2019). Undergraduate students' perceptions of Project-Based Learning (PBL) effectiveness: A case report in the Colombian Caribbean. *Cogent Education, 6*(1). https://doi.org/10.1080/2331186X.2019.1616364

McMillan, J.H. & Schumacher, S. (2010). *Research in Education – Evidence-Based Inquiry*. Boston: Pearson Education.

Noorah, M. (2017). Project-based learning in higher education in the UAE: a case study of Arab students in Emirati Studies. Learning and Teaching in Higher Education, 14(2),DOI: 10.18538/lthe.v14.n2.294

Oroujlo, N., & vahedi, M. (2011). Motivation, Attitude, and Language Learning. *Social and Behavioral Sciences, 29*(2), DOI: 10.1016/j.sbspro.2011.11.333

Parisa & Taghi, F., (2016). The relationship between language learning motivation and and foreign language achievement as mediated by perfectionism: the case of high school EFL learners. *Journal of Language and Cultural Education*, DOI: 10.1515/jolace-2016-0027

Patel, P. (2009). *Introduction to Quantitative Methods*. Empirical Law Seminar. Harvard Law School.

Sreekumar, 2023. What is Quantitative Research? Definition, Methods, Types, and Examples. Récupéré sur https://researcher.life/blog/article/what-is-quantitative-research-types-and-examples/

Stewart, M., (2007). The interrelated dynamics of unemployment and low-wage employment. *Journal of Applied Econometrics*. https://doi.org/10.1002/jae.922

Trochim, W. (2006). The Research Methods Knowledge Base. Récupéré sur *https://www.researchgate.net/publication/243783609_The_Research_Methods_Knowledge_Base*

Walter, L., Paco, A., & Shiel, C. (2016). Implementing and Operationalising Integrative Approaches to Sustainability in Higher Education: the role of project-oriented learning. *Journal of Cleaner Production, 133*(1), DOI: 10.1016/j.jclepro.2016.05.079

Wurdinger, S., Haar, J., Hugg, R., & Bezon, J. (2007). A Qualitative Study Using Project-Based Learning in a Mainstream Middle School. *Improving Schools Journal, 10*(2), DOI: 10.1177/1365480207078048

Xiaomie, D., & Jie, H. (2016). A Literature Review on the Definition and Process of Project-Based Learning and other Relative Studies. *Creative Education Journal, 7*(2), DOI: 10.4236/ce.2016.77112.

Zaman, J. (2018). Self-Regulated Project-Based Learning in Higher Education: A Case Study Design. Récupéré sur *ResearchGate: 10.21125/edulearn.2018.1696*

Zhang. (2007). Application of Project-Based Teaching of the curriculum of Combining Study with Work of Higher Vocational Education. Proceedings Journal, 10.2991/icetis-13.2013.165.