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Project-Based Learning's Impact on Fostering The Socio-Environmental Attitude

Abdellah Ibrahim Mohammed Elfeky[1]*, Mohammed Salah-Eldin Abdel-Aziz Hassanein[2], Amal Zayed[3], Sherif Mohamed Mahmoud[4] and Marwa Yasien Helmy Elbyaly[5]
[1]Department of Curriculum and Instruction, College of Education, Najran University, Najran, Saudi Arabia
[2]Department of Administrative Sciences, Applied College, Najran University, Najran, Saudi Arabia
[3]Educational Psychology Department, Faculty of Education, Kafrelsheikh University, Kafr El-Sheikh 33516, Egypt
[4]Assistant Professor, Faculty of Education and Arts Sohar University Sultanate of Oman
[5]Department of Home Economics, Faculty of Specific Education, Kafrelsheikh University, Egypt
[1]abdalah.elfeqi@spe.kfs.edu.eg, [2]mshassanein@nu.edu.sa, [3]amal.zayed@edu.kfs.edu.eg, [4]SMahmoud@su.edu.om and [5]Marwa.mohamed1@spe.kfs.edu.eg
[1]https://orcid.org/my-orcid?orcid=0000-0001-9208-8537, [2]https://orcid.org/my-orcid?orcid=0000-0001-9208-8537 and [5]https://orcid.org/my-orcid?orcid=0000-0001-5521-8494

ABSTRACT
This research aims to reveal the effectiveness of project-based learning on fostering the attitude of students. The research was conducted on a sample of employees of the Department of Curricula and Teaching Methods, after dividing them into two equal groups (control and experimental) at random. To achieve the aim of the current research, a measure of students' attitude towards the course was built. The current research relied on the semi-experimental approach to reveal the relationship between the independent variable and the dependent variable. The results revealed a statistically significant difference among the two research groups in the direction towards the course in favor of the experimental group.

Keywords: *Project; attitude; Project based learning*

INTRODUCTION
A phrase used in projects to describe the method by which something is produced over time [1, 2]. Project-based learning is an organized approach to teaching and learning that involves students in difficult, practical tasks that culminate in a presentation to an audience or the creation of a repeatable final product. This approach helps students gain knowledge and skills that will help them live better lives [3-5]. Along with providing knowledge, project-based learning helps students develop their critical and creative thinking, teamwork, continual learning, self-evaluation, and ability to adapt to change [6]. In addition, project-based learning is a fresh approach to lifetime learning that emphasizes education for sustainable development [7, 8]; one of the major activities in project-based learning that is connected to constructivism is the transmission of knowledge and the creation of new knowledge [9, 10]. Additionally, project-based learning supports the transition from learner-centered to teacher- and curriculum-centered learning [11-13]. Results from past studies showed that using a topic-related problem in a real-world situation as part of a project-based learning experience had a favorable impact on learning motivation and academic achievement for students [14-16]. Furthermore, research have indicated that project-based learning should be employed for a specific number of hours each week and is widely used in a variety of courses [17-19].

In other terms, project-based learning can be described as an inquiry-based educational technique that involves students in creating knowledge by having them create useful products and finish important projects [20, 21]. This instructional approach also aids in the practical skill development of the students. And reasoning, improving their capacity for research, analysis, and decision-making [22]. Additionally, project-based learning enables students to take part in activities that are comparable to those performed by experts

in the actual world [23]. With a project-based learning approach, students are put into groups of varying sizes, with each group assigned equal duties and roles in the project's completion [24]. Additionally, project-based learning activities and procedures entail using the mind or the brain to connect knowledge, thought, and expression to recognize divergent points of view [25]. Therefore, research-based theoretical concepts, active building, social interactions, and cognitive tools form the foundation of project-based learning [26]. Through the use of projects, students can learn by posing questions, looking for answers, collaborating with others, exchanging ideas, and creating plans [27]. The primary goal of project-based learning is to improve students' capacity for conducting systematic research on a given issue. The second goal is to encourage self-learning, and the third goal is material acquisition [28]. The primary goal of project-based learning is to improve students' capacity for conducting systematic research on a given issue. The second goal is to encourage self-learning, and the third goal is material acquisition [29-31].

It can also be said that one of the most important reasons for the decline in students' attitude from the point of view of the researchers is the lack of educational attitudes for dialogue and discussion between the student and the teacher on the one hand, and between him and his peers on the other hand. This is in addition to the huge density of content in the course, the lack of sufficient time to discuss and share content elements, and the scarcity of educational activities that help complete student learning [32-34]. Which helped the students find it difficult to deal with the course in this way. This prompted the researchers to try to deal with the reasons for the decline in the trend towards the aforementioned decision. That is through project-based learning, due to its ability to deal positively to support a positive attitude towards the course.

RESEARCH PROBLEM

Through the work of the researchers at Najran University, they noticed a decrease in perseverance in completing the lecture, and the students' feeling of boredom, and lack of commitment to attendance with many excuses. This led to a decrease in their ability to achieve the objectives of the course as a natural result of previous behaviors. This prompted the researchers to try to link the low rate of achievement of the course objectives with the direction towards the course. By applying a measure of attitude towards the course on a sample of students, it confirmed the decrease in attitude towards the course. This prompted the researchers to think of a practical solution to this problem by trying to present that course in the form of a project-based learning.

By reviewing previous studies, including the study of Elfeky and Elbyaly [35], Elfeky and Elbyaly [36], Elfeky and Masadeh [37]. As well as recommendations of educators need to take advantage of technological innovations in removing obstacles facing learners. The researchers were able to formulate the research problem in the presence of a significant decrease in the attitude towards the course. This prompted the researchers to reveal the project-based learning's impact on fostering the attitude.

RESEARCH AIMS

- Reaching an effective employment of project-based learning in support of the attitude.
- Identifying the effect of project-based learning on the attitude towards the course for students.

RESEARCH IMPORTANCE

- The trend towards universities and other educational institutions adopting the use of project-based learning to support students' attitudes towards educational courses.
- Enhancing students' positive attitudes, dealing with negative attitudes, modifying them, and adapting this type of learning to suit their tendencies and desires in order to make this learning a success and to generalize its use in various academic courses.

METHODOLOGY

Experimental processing material

Through the Blackboard platform, this research was based on the “Research Methods” course, and continued during the first semester of 2022. The participants in the experimental group were divided into a

number of subgroups (each subgroup consisted of 6 learners). So that the process goes through a number of steps, namely 1- Teacher progression, for the course through the virtual classroom integrated with the learning management system used in the university through discussions that activate the previous experience of the participants. 2- Encouraging the participants in the sub-group so that they can devise a motivation question, with the aim of providing the participants with the motivation to continue focusing on the subject of the project. 3- Determine the roles and tasks of the sub-group participants; then collect data associated with the leadership question from each participant individually. 4- Participants in each sub-group should share the information they have reached with their peers for discussion and evaluation. The teacher also provides some important observations for the sub-groups. 5. Finally, each subgroup cooperatively presents the final product to the other subgroups.

The control group receives education through (10) lectures in the usual classroom. It should be noted that the traditional classroom is not devoid of cooperation between the participants in the control group, with the aim of enhancing their participation and allowing for discussion and exchange of views. In the end, each student has to submit a research plan that demonstrates his critical thinking skills, after which these plans are evaluated using the critical thinking scale.

The scale has gone through the following steps:

Sources for building the scale
The scale was built based on many studies and literature, which dealt with how to build and design attitude scales in general. Which dealt with building measures of attitudes towards technological innovations and their use in education in particular, including Elfeky, Masadeh [38], Elfeky, Najmi [39].

Drafting the scale phrases
After identifying the previous sources, the researcher formulated the scale phrases, which consisted of (30) half of which are positive phrases and the other half are negative phrases express or implied.

Determining the method of estimating the expressions of the scale
By examining the literature that dealt with the methods and methods of constructing the scales, the researcher decided to follow the Likert type method for the accumulated estimates. This is due to its many advantages in terms of: the ability to distinguish, the ease of application of the scale, the ease of correcting the scale and processing its results, the answer to each statement bears all degrees of approval or opposition [40]. Through the Likert method, statements are presented to the individual and in front of each statement there are five alternatives to respond (strongly agree, agree, neutral, disagree, strongly disagree).

Initial experimentation of the scale

By initially applying the scale to a group of students of the optimal investment diploma in the Department of Curricula and Teaching Methods at the College of Education - Najran University, they numbered (20) learners.

Determining the appropriate time for the scale
through the researchers recording the time it took each student to answer all the vocabulary, then calculating the average time required to answer the scale, and it turned out that the time for applying the scale is approximately (20) minutes.

Calculating the stability coefficient of the scale through the Cronbach alpha equation, where the scale stability coefficient (0.91) was reached, using the statistical software package (SPSS), and then the results obtained can be trusted when applying the scale to the research sample.

Checking the validity of the scale
By presenting the scale in its initial form to a number of arbitrators specialized in curricula and educational techniques, who confirmed the validity of the scale for application, and the observations made by the arbitrators were taken into account when final preparation of the scale.

Research sample and experimental design

(60) Participants from the Department of Curricula and Teaching Methods of the College of Education at Najran University made up the research sample for the study's conclusion. In accordance with the experimental design of the study, they were also randomly split into two groups (the experimental group and the control group), each of which contained (30) individuals.

The researchers also employed the semi-experimental strategy, which called for the application of the pre-post experimental design. Using a test group design with two comparable groups (experimental and control).

Table (1): The research's quasi-experimental methodology

	Pre-test	**Treatment**	**Post-test**
Control Group	Attitude scale	A	Attitude scale
Experimental Group		B	

Whereas, treatment (A) represents studying the content in the classroom in the traditional way, and treatment (B) represents studying the course content with based on the project-based learning.

RESULTS

The SPSS V.14 statistical software package was used to examine the attitude scale data after they had been monitored in the pre- and post-applications.

Prior to the experiment, make sure the two study groups' attitudes are uniform:

Table (2): Relevance of pre-measurement variations between the two groups (control and experimental) in respect to the attitude scale

	Sum of Squares	**DF**	**Mean of Square**	**F. ratio**	**Sig.**
Between Groups	9.15	1	9.15	2.18	0.246
Within Groups	419.21	58	9.37		
Total	**428.36**	**59**			

According to the statistical analysis's findings, which are displayed in the previous table, the value of "F" was (2.18), which is non-significant at the level of (0.05). This indicates that there is no statistically significant difference between the experimental and control groups prior to application at the level of (0.05). Toward the course.

The results related to the answer to the research question

In order to verify the veracity of the claim: "There is a statistically significant difference at the level (0.05) between the modified earning percentage for the scores of the students of the control group and the experimental group in the direction towards the course in favor of the experimental group". The significance of the differences between the adjusted earning percentage for the scores of the students in the two experimental control groups in the direction towards the course was assessed by the researchers using the Independent-Samples T-test to test this hypothesis. The following outcomes were attained:

Table (3): significance of "T" for the variation in the adjusted earning percentage for the students' scores from the control and experimental groups on the attitude scale

Group	**M**	**SD**	**M-Difference**	**T. Ratio**	**Sig.**
Control Group	81.2	6.127	14.5	5.03	.042
Experimental Group	95.7	5.719			

From the previous table, it is clear that the value of "T" for the difference between the modified earning percentage for the scores of the learners of the two groups (the control and the experimental) in the attitude scale was (5.03). The average score of learners in the control group was (81.2). While the average score of learners in the experimental group was (95.7). Thus, we find that the value of "t" is statistically significant. In such cases, the statistical significance is directed in favor of the group with the highest average, which

is the experimental group, as the arithmetic mean for it was (95.7), an increase of (14.5) over the control group.

Therefore, the statistical significance favors the experimental group, which is the higher group on average. The research hypothesis is therefore accepted. "There is a statistically significant difference at the level (0.05) between the modified gain ratio for the grades of the students of the experimental group. In addition, the control group in the direction towards the course in favor of the experimental group.

DISCUSSION

According to the findings presented in Table 3, there was a statistically significant difference at the level of (0.05) between the modified earning percentage for the scores of the experimental group's students who were instructed using a project-based learning. In addition, the control group, which pursues the course in favor of the experimental group using the conventional methods of classroom study. This supports the research hypothesis, which is accepted. This is a good indication that highlights the significance of project-based learning. Which would cause the learners in the Department of Curricula and Teaching Methods at the College of Education - Najran University to create a trend toward the course.

The researchers believe that this result can be explained in the light of the following:

- The student interacts with the teacher and his peers through text, images, still and animated drawings, and sound and sound effects, which motivates the students towards adopting positive attitudes towards the course [41].
- The e-learning attitudes based on the project-based learning take into account the individual differences among the learners, which helped to form positive attitudes among the research sample towards the course [42].
- The project-based learning provides feedback to learners, as students' inquiries are quickly answered, which achieved a kind of psychological comfort for learners as a result of the speedy response to their inquiries [43].
- The project-based learning allows for various dialogue and discussion processes among learners without the need for face-to-face confrontation, which removes the factor of fear and dread that some learners may have, thus forming positive attitudes [44].

RECOMMENDATIONS

- Supporting the direction of academic courses by encouraging the use of project-based learning.
- Take advantage of project-based learning used in other courses.
- Given project-based learning, an overall framework is required to maximize the advantages of online courses.
- Creating training programs for teachers and students to help them understand how to use project-based learning.

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REFERENCES

1. Ahmed, E.S.A.H., S.M. Alharbi, and A.I. Elfeky, *Effectiveness of a proposed training program in developing twenty-first century skills and creative teaching skills among female student teachers, specializing in early childhood.* Journal of Positive School Psychology, 2022: p. 4316-4330.
2. Alharbi, S.M., A.I. Elfeky, and E.S. Ahmed, *The effect of e-collaborative learning environment on development of critical thinking and higher order thinking skills.* Journal of Positive School Psychology, 2022: p. 6848-6854.

3. Almalki, A.D.A. and A.I.M. Elfeky, *The effect of immediate and delayed feedback in virtual classes on mathematics students' higher order thinking skills.* Journal of Positive School Psychology, 2022: p. 432–440-432–440.
4. Elbourhamy, D.M., A.H. Najmi, and A.I.M. Elfeky, *Students' performance in interactive environments: an intelligent model.* PeerJ Computer Science, 2023. **9**: p. e1348.
5. Elbyaly, M. and E. El-Fawakhry, *Online teaching course to develop STUDENTS'CREATIVITY in handmade embroidery.* British Journal of Education, 2016. **4**(13): p. 30-51.
6. Anazifa, R.D. and D. Djukri, *Project-based learning and problem-based learning: Are they effective to improve student's thinking skills?* Jurnal Pendidikan IPA Indonesia, 2017. **6**(2): p. 346-355.
7. Elbyaly, M.Y.H., *Heritage Revival by the Use of Saudi Bedouin Textiles in the Gulf Mantle.* Journal of Home Economics, 2016. **26**(4): p. 127-143.
8. Elbyaly, M.Y.H. and A.I.M. Elfeky, *The role of metacognition in promoting deep learning in MOOCs during COVID-19 pandemic.* PeerJ Computer Science, 2022. **8**: p. e945.
9. Elbyaly, M.Y.H. and A.I.M. Elfeky, *Investigating the effect of vodcast to enhance the skills of the Canadian smocking and complex problem solving.* Current Psychology, 2022. **41**(11): p. 8010-8020.
10. Elbyaly, M.Y.H. and A.I.M. Elfeky, *The Effectiveness Of Project-Based Learning On Enhancing The Critical Thinking Skills Of Optimal Investment Students.* Annals of Forest Research, 2023. **66**(1): p. 1595-1606.
11. Elbyaly, M.Y.H. and A.I.M. Elfeky, *The Effect Of A Simulation Program On Students At The College Of Education's Acquisition Of Hand Embroidery Skills.* European Chemical Bulletin, 2023. **12**: p. 6575-6580.
12. Elbyaly, M.Y.H. and A.I.M. Elfeky, *Flipped Classroom: Enhancing Fashion Design Skills For Home Economics Students.* learning, 2023. **4**: p. 7.
13. Elbyaly, M.Y.H. and A.I.M. Elfeky, *The Impact of Problem-Solving Programs In Developing Critical Thinking Skills.* European Chemical Bulletin, 2023. **12**: p. 6636-6642.
14. Elbyaly, M.Y.H. and A.I.M. Elfeky, *Collaborative E-Learning Environment: Enhancing The Attitudes Of Optimal Investment Diploma Students Towards The Digital Skills Course.* European Chemical Bulletin, 2023. **12**: p. 6552-6558.
15. Elbyaly, M.Y.H. and A.I.M. Elfeky, *The Effectiveness of Using Advanced Organizations Within The Virtual Classroom To Enhance The Acceptance Of Technology During Disasters.* European Chemical Bulletin, 2023. **12**: p. 6603-6612.
16. Elbyaly, M.Y.H. and A.I.M. Elfeky, *The Efficiency of Online Learning Environments In Fostering Academic Motivation.* European Chemical Bulletin, 2023. **12**: p. 6622-6628.
17. Elbyaly, M.Y.H. and A.I.M. Elfeky, *The Efficiency of Instructional Gaming Programs In Stimulating Creative Thinking.* European Chemical Bulletin, 2023. **12**: p. 6613-6621.
18. Elbyaly, M.Y.H. and A.I.M. Elfeky, *The Effectiveness of Employing Motivational Designed E-Learning Situations On Developing Achievement In Computer Science Curricula For Optimal Investment Students.* European Chemical Bulletin, 2023. **12**: p. 6595-6602.
19. Elbyaly, M.Y.H. and A.I.M. Elfeky, *The effectiveness of a program based on augmented reality on enhancing the skills of solving complex problems among students of the Optimal Investment Diploma.* Ann. For. Res, 2023. **66**(1): p. 1569-1583.

20. Elbyaly, M.Y.H. and A.I.M. Elfeky, *The impact of blended learning in enhancing the skill performance of producing digital content among students of optimal investment.* Ann. For. Res, 2023. **66**(1): p. 2031-2043.
21. Elfeky, A. *Social Networks Impact factor on Students' Achievements and Attitudes towards the" Computer in Teaching" Course at the College of Education*. in *International journal on E-learning*. 2017. Association for the Advancement of Computing in Education (AACE).
22. Elfeky, A.I.M., *The use of CSCL environment to promote students' achievement and skills in handmade embroidery.* Journal of Home Economics, 2016. **26**(3).
23. Elfeky, A.I.M., *The effect of personal learning environments on participants' higher order thinking skills and satisfaction.* Innovations in Education and Teaching International, 2018.
24. Elfeky, A.I.M., S.M. Alharbi, and E.S.A.H. Ahmed, *The effect of project-based learning in enhancing creativity and skills of arts among kindergarten student teachers.* Journal of Positive School Psychology, 2022. **6**(8): p. 2182-2191.
25. Elfeky, A.I.M. and M.Y.H. Elbyaly, *The impact of learning object repository (lor) in the development of pattern making skills of home economics students.* British Journal of Education, 2016. **4**(2): p. 87-99.
26. Elfeky, A.I.M. and M.Y.H. Elbyaly, *Multimedia: different processes.* Interactive multimedia-multimedia production and digital storytelling, 2019.
27. Elfeky, A.I.M. and M.Y.H. Elbyaly, *Developing skills of fashion design by augmented reality technology in higher education.* Interactive Learning Environments, 2021. **29**(1): p. 17-32.
28. Elfeky, A.I.M. and M.Y.H. Elbyaly, *The Effect Of E-Tutorial Programs On Improving The Producing Digital Content Skill.* European Chemical Bulletin, 2023. **12**: p. 6581-6587.
29. Elfeky, A.I.M. and M.Y.H. Elbyaly, *The use of data analytics technique in learning management system to develop fashion design skills and technology acceptance.* Interactive Learning Environments, 2023. **31**(6): p. 3810-3827.
30. Elfeky, A.I.M. and M.Y.H. Elbyaly, *The Impact of Mobile Learning On Developing The Skills Of Integrated Science Operations Among Students Of The Optimum Investment Diploma.* European Chemical Bulletin, 2023. **12**: p. 6629-6635.
31. Elfeky, A.I.M. and M.Y.H. Elbyaly, *The Effect of Simulation Programs On Enhancing Skills Of Digital Applications.* European Chemical Bulletin, 2023. **12**: p. 6588-6594.
32. Elfeky, A.I.M. and M.Y.H. Elbyaly, *MANAGING DRILL AND PRACTICE PROGRAMS WITH A MOTIVATIONAL DESIGN AND THEIR EFFECTS ON IMPROVING STUDENTS'ATTITUDES TOWARD INFORMATION AND COMMUNICATION TECHNOLOGY COURSES.* European Chemical Bulletin, 2023. **12**: p. 6567-6574.
33. Elfeky, A.I.M. and M.Y.H. Elbyaly, *The Impact Of Project-Based Learning On The Development Of Cognitive Achievement In The Course Of Applications In Educational Technology Among Students Of The College Of Education At Najran University.* European Chemical Bulletin, 2023. **12**: p. 6643-6648.
34. Elfeky, A.I.M. and M.Y.H. Elbyaly, *Examining The Effects Of Virtual Classroom Use Inside Learning Management Systems On Enhancing Student Satisfaction.* Ann. For. Res, 2023. **66**(1): p. 1980-1990.
35. Elfeky, A.I.M. and M.Y.H. Elbyaly, *The Impact Of Virtual Classrooms On The Development Of Digital Application Skills Among Teachers Of Digital Skills In Najran Region.* Ann. For. Res, 2023. **66**(1): p. 2044-2056.

36. Elfeky, A.I.M. and M.Y.H. Elbyaly, *The effectiveness of virtual classrooms in developing academic motivation across gender groups.* Ann. For. Res, 2023. **66**(1): p. 2005-2020.

37. Elfeky, A.I.M. and T.S.Y. Masadeh, *The Effect of Mobile Learning on Students' Achievement and Conversational Skills*. International Journal of higher education, 2016. **5**(3): p. 20-31.

38. Elfeky, A.I.M., T.S.Y. Masadeh, and M.Y.H. Elbyaly, *Advance organizers in flipped classroom via e-learning management system and the promotion of integrated science process skills.* Thinking Skills and Creativity, 2020. **35**: p. 100622.

39. Elfeky, A.I.M., A.H. Najmi, and M.Y.H. Elbyaly, *The effect of big data technologies usage on social competence.* PeerJ Computer Science, 2023. **9**: p. e1691.

40. Vigil Colet, A., D. Navarro González, and F. Morales Vives, *To reverse or to not reverse Likert-type items: That is the question.* Psicothema, 2020.

41. Elfeky, A.I.M., A.H. Najmi, and M.Y.H. Elbyaly, *The impact of advance organizers in virtual classrooms on the development of integrated science process skills.* PeerJ Computer Science, 2024. **10**: p. e1989.

42. Elfeky, A.I.M., A.H. Najmi, and M.Y.H. Elbyaly, *Effects of Big Data Analytics in Learning Management Systems for Improving Learners' Academic Success.* Profesional de la información, 2024. **33**(1).

43. Masada, T.S.Y., *Immediate versus delayed feedback in promoting student teachers skills for lesson plan implementation.* Thouqan Saleem Yakoub Masadeh and Abdellah Ibrahim Mohammed Elfeky (2017) Immediate Versus Delayed Feedback in Promoting Student Teachers Skills for Lesson Plan Implementation, British Journal of Education, 2017. **5**(8): p. 43-58.

44. Masadeh, T.S.Y. and A.I.M. Elfeky, *Efficacy of open-source learning management systems in developing the teaching skills of English language student teachers.* American Journal of Educational Research, 2016. **4**(4): p. 329-337.