

Employing project-based learning to foster essential professional skills in students of graphic design

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Abstract

Around the world, employers seek graduates with collaboration, teamwork, interpersonal, communication, and project management skills worldwide. Project-based learning (PBL) helps foster these essential professional skills by providing learning opportunities in an environment of mutual investigation. Collaboration is integral to PBL, but often advantages of collaboration are not the focal point of discussion. This study focuses on creating a collaborative learning environment by introducing a real-world project under PBL instructional strategy to check its efficacy in developing some essential professional skills in graphic design education. The project was introduced in 2019 in the Publication Design course undertaken by 35 students enrolled in an undergraduate graphic design programme in India. The study employed mixed-method research in the form of a survey questionnaire followed by semi-structured interviews. The study results show that PBL helps foster the skills mentioned earlier to prepare students for the 21st-century workplace. Joint efforts by students in projects in graphic design education develop multiple skills much needed in the current workplace scenario.

Keywords: Project-Based Learning (PBL), Essential Professional Skills, Collaboration, Graphic Design Education, Real-World Project

Extended Abstract

Introduction: Employers in the twenty-first century emphasize collaboration, teamwork, interpersonal, communication, project planning, and problem-solving skills besides core discipline skills (Donnelly & Fitzmaurice, 2005: 2; Fallows & Steven, 2000: 75; Trilling & Fadel, 2009 as cited in Kivunja, 2014: 81). Design educators aim to prepare students for the practice of the profession thus, it is imperative to create learning environments that give them the experience and exposure of the professional environment. Jones (2109: 1) points out that project-based learning is an instructional strategy that addresses the curriculum requirements through collaboration on a real-world project for a long duration. The product development phase entails iterations and reflections resulting in an artefact presented in a public setting. The instructors provide scaffolding support but also respect the voice of the learners. PBL promotes the development of essential skills for the 21st-century work environment to become productive members of the globalized world (Bell, 2010: 43). Collaboration is one of the key components of PBL, providing learning opportunities in an environment of mutual investigation. Nonetheless, the advantages of collaboration are often not the focal point of discussion (Buckler, 2019).

Purpose and scope: This research's objective was to assess if Collaboration under PBL fosters essential professional skills amongst students of the undergraduate graphic design program. This research's objective was to assess the efficacy of collaboration under PBL in fostering essential professional skills amongst students of the undergraduate graphic design program. However, the core idea of introducing a real-world project under PBL to prepare students to meet the industry challenges is well-aligned with allied design discipline, allowing a wider application of this study.

Method: The study employed a mixed-method approach. A perception-based survey was employed in the form of a 5-point Likert scale, ranging from 1 as a result of strongly disagree to 5 as a result of strongly agree. The qualitative phase in the form of semi-structured interviews followed after the quantitative data collection. This paper describes a project-based learning environment for students registered in an undergraduate Communication Design programme in India. PBL learning environment was created in 2019 in the course Publication Design offered in Semester V—a core course focused on developing graphic design skills. The project required students' collaborative engagement to deliver the end product or the artefacts in the form of four books for the institute's library. The project addressed core curricular requirements allowing learners to explore and understand the fundamental concepts and principles of the discipline. A framework of PBL was designed and implemented in a studio setting. Four groups were formed based on individual skills and abilities to match the requisite skills for the projects, ensure heterogeneity, and create a cross-learning environment. Collaboration in groups was critical; there was a three-tier collaboration: a) collaboration with group members, b) collaboration with the class group, c) collaboration with the instructors. The design process for the project entailed various activities and methods. Situation analysis from different standpoints, problem articulation, idea exploration, prototyping and testing, feedback and improvement, and final delivery of the solution or the end product. Literature indicates that scaffolding techniques are very effective in teaching. The group projects were divided into three phases and broken down into smaller tasks to provide scaffolding support for a structural framework. The end-product results from the act of designing that employs the design process. The course resulted in four books designed by students for the Institute's library. These books represented the solution proposed by the students that reflected the development of their knowledge. After a five-week course duration, a survey questionnaire was administered to 35 students. The semi-structured interviews were conducted with 14 volunteers to gain clarity regarding the results of the quantitative data. Both qualitative and quantitative phases attempted to elicit students' responses on the development of teamwork, communication skills, interpersonal skills, and project management skills.

Findings and conclusion: The study results show that collaboration with peers in PBL creates an environment for developing a repertoire of skills useful in the workplace. Thus, it is an important vehicle to develop some important skills for future graphic designers. It is evident that participants utilised individual strengths to make a valuable contribution and seemed satisfied with the heterogeneous skills group. Tolerance and respect are essential aspects of living in a community. Connecting, communicating, and understanding varied viewpoints contextually to solve problems are critical for designers. Tolerance and respect are essential character traits fostered in collaborative pursuits. It was evident that the project of the given scale was possible due to the collaborative format of different minds working together, allowing learners to break away from the linear thought process. However, proper monitoring of group working mechanisms needs to be in place to ensure equal participation of each group member. Further, a proper balance is required on the part of the instructors so that while learners utilise their strengths optimally, they also come out of their comfort zones to explore different learning opportunities.

Keywords: Project-Based Learning (PBL), Essential Professional Skills, Collaboration, Graphic Design Education, Real-World Project

INTRODUCTION

Twenty-first-century employers are looking for graduates who possess collaboration, teamwork, interpersonal, communication, project planning, and problem-solving skills besides core discipline skills (Donnelly & Fitzmaurice, 2005: 2; Fallows & Steven, 2000: 75; Trilling & Fadel, 2009 as cited in Kivunja, 2014: 81). Design educators aim to create learning environments that prepare students for the workplace, therefore, establishing environments to engage learners in professional practice and experience is considered important. Jones (2019) states that the pedagogical approach that engages learners in real-world tasks to foster learning is called project-based learning (PBL), where learners collaborate on projects that address curriculum requirements. The learners engage for a longer duration to achieve their objectives by thoroughly examining the problem at hand. Further, the inquiry process involves iterations and reflection stages toward developing the artefact presented in a public setting. The project implementation process respects students' views, supported by scaffolding by the instructors (p. 1). PBL helps learners to foster essential skills that prepare them

for the 21st-century workplace and supports them in becoming productive members of the globalized world (Bell, 2010: 43). Collaboration is one of the key components of PBL that provides learning opportunities in an environment of mutual investigation. Nonetheless, the advantages of collaboration are often not the focal point of discussion (Buckler, 2019). In project-based learning, a real-world project refers to a project with real-world relevance, context, and utility. Further, PBL is an acronym commonly used for both project-based learning and problem-based learning. Both are popular educational approaches. In the current context, PBL stands for project-based learning. In the context of this study, an artefact is the end-product-a result of the act of designing.

This paper describes a project-based learning environment created for students registered in an undergraduate programme in communication design at Nirma University, India. In India, communication design has become an umbrella term encompassing graphic design, animation film design, exhibition design, film, and video design, and user experience design. The project required students' collaborative engagement to deliver the end product or the artefacts in the form of four books for the institute's library. The project addressed core curricular requirements allowing learners to explore and understand the fundamental concepts and principles of the discipline. This research contributes to graphic design education, especially to give teachers an exemplar of PBL and how collaboration fosters the development of essential professional skills.

Objective

The research objective was to assess the efficacy of collaboration under PBL to foster essential professional skills such as teamwork, communication, interpersonal skills, and goal-setting and project management skills amongst students of the undergraduate graphic design programme.

Literature Review

Key findings of *The Future of Jobs Report, 2020* indicate that skills gaps continue to be high, in-demand employability skills across jobs will change in the next five years, and they are likely to be inclined toward critical thinking and analysis, problem-solving, and self-management skills (p. 5). Organisation for Economic Co-operation and Development (OECD), 2018 report emphasises social and emotional skills such as empathy, self-efficacy and collaboration. Cognitive and meta-cognitive skills such as critical thinking, creative thinking, learning to learn, and self-regulation in students (OECD, 2018: 5). A study by Wang (2006: 79) concluded that besides design-oriented competencies, graphic design experts perceived soft-skills related competencies, critical for employment by graphic design practitioners. Wang (2006: 7), in his study, specifically refers to soft skills like teamwork, interpersonal skills, communication, leadership, creativity and problem solving. Jones (2019: 3) stresses that PBL is an excellent medium for teaching learners essential competencies like problem-solving, critical thinking, innovation, collaboration, and presentation-all relevant in the current economy. Furthermore, "collaboration yields the best results for professional development" (Boss & Krauss, 2014: 7). "The American Association of Colleges and Universities (AAC&U) considers collaborative assignments and projects as one of the ten high-impact practices that any course or curriculum could apply" (Kuh, 2008: 10). Race (2007: 126) expresses, the current emphasis is on key skills like oral communication, problem-solving, self-organisation, and reflection for which working in a social setting is essential. Experience of collaboration over projects brings forth benefits for learners through a setting and experience that simulates the workplace resulting in profound understanding and retention of subject matter besides developing complex cognitive activities like analysis, synthesis, and evaluation (Ellis & Hafner, 2007: 13). Despite the advantages of collaboration, a large part of research in this area has been conducted at the primary and secondary levels of education with limited empirical evidence to check its efficacy in higher education (Gokhale, 1995).

Course Description

Publication Design course is offered in semester V of the Communication Design undergraduate programme at Nirma University, India. It is one core course that focuses on developing graphic design skills. The course was based on the PBL framework focusing on collaborative projects. This course covers fundamental graphic design principles of designing for print publications. As a prerequisite, students underwent elementary courses in previous semesters to develop basic design skills, design concepts, and design theory, including courses in typography, layout, printing technology, and software training for print publication.

METHODOLOGY

The study employed a mixed-method approach. A survey questionnaire was designed and administered to 35 after a five-week course duration. The Institutional Ethical Committee, Nirma University, reviewed and approved Project No: IEC/NU/22/ID/01. The survey items were adapted from the existing literature on the theory of PBL. Thirty-three out of thirty-five students responded to the questionnaire; a majority (100%) of the students were in the twenty to twenty-two-year age bracket. A perception-based survey was employed in the form of a 5-point Likert scale, ranging from 1 as a result of *strongly disagree* to 5 as a result of *strongly agree*. Semi-structured interviews were conducted with 14 volunteers to understand and clarify the quantitative data results. Results of the quantitative data guided the interviews phase. Both qualitative and quantitative phases attempted to elicit students' responses on the development of teamwork, communication skills, interpersonal skills, and project-management skills.

Design and Procedure

Group Formation Strategy

The class of thirty-five was divided into four groups. The amount of work in projects determined the group sizes. Instructors' experience with the students helped in group formation. The requisite skills for the projects were content writing, illustration, photography, layout, typography, software skills, and knowledge of print production. Race (2007) suggests that for some extended group tasks, it may be valuable to try an arrangement to include at least one member with identified skills and competencies (p. 132). Members' selection was based on individual skills and abilities to match the requisite skills for the project, ensure heterogeneity, and create a cross-learning environment.

Collaboration

"Collaborative learning is an umbrella term for a variety of educational approaches involving a joint intellectual effort by students, or students and teachers together" (Smith & MacGregor, 1992: 11). The three-tier collaboration helped to achieve the project objectives.

Collaboration with group members: This was at the heart of the project and the most important collaboration. Group members collaborated at different project stages for intermediary tasks in the design process (Figure 1). They collaborated during non-university hours through emails, Google documents, conference calls, WhatsApp groups, and online meetings to stay connected, take feedback, and track progress.

Collaboration with the class: The class of 35 students together generated the written and visual content by contributing their work on courses undertaken in earlier semesters.

Collaboration with academics: The content was checked for language, comprehension and carefully edited by a team of academics.

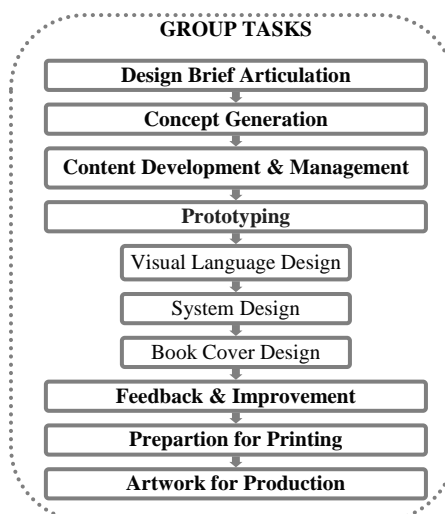


Figure 1. Stages of the design process for the project

The Design Process

A design process entails various activities and methods. Situation analysis from different standpoints, problem articulation, idea exploration, prototyping and testing, feedback and improvement, final delivery of the solution or the end-product. The steps in the design process are iterative and not necessarily linear. Graphic design education takes place in a studio setting where teachers engage the students in the activity of designing. “Learning by doing” in a design studio through design exercises is at the heart of graphic design education. “The design activity stage represents the process of designing. This has been referred to as the *learning by doing* approach and is fundamental to the authentic learning environments of project-based learning” (Dorst, 2006 as cited in Ellmers, 2014: 70).

Four groups were formed Group A to Group D to design different publications. Students had freedom for project selection, design decisions, and project planning & management. Several researchers, such as Deci & Ryan (1987: 1034) and Lepper (1988: 304), have argued that improving motivation in academic task choice and learner control is important. Teams contributed during all intermediate stages (Figure 1) of project development in collaboration with their respective group members with facilitation from the instructors.

Guidance and Scaffolding

To provide scaffolding support, group projects were divided into three phases and smaller tasks for a structural framework (Table 1). According to the Glossary of Education Reform, “scaffolding refers to a variety of instructional techniques used to move students progressively toward stronger understanding and, ultimately, greater independence in the learning process” (Scaffolding Definition, 2013). Literature indicates that scaffolding techniques are very effective in teaching. Blumenfeld et al. (1991: 371) argue that teachers must employ scaffolding by breaking down tasks, giving models, exemplars, prompting and coaching learners to achieve the learning goals. Thus, to strengthen and revisit the fundamental concepts and skills a non-gradable crash assignment was given as a preparation for the future project with higher complexities. Literature indicates that show and tell method, modelling, exemplars are the cornerstone for scaffolding. The instructors showed examples of well-designed published books for discussion and analysis. In the initial stage, for group compatibility, students were made to research, analyse and present the work of well-known book designers. The project was interspersed with presentations on types of paper folds, imposition plans. (Here, imposition plan refers to a method of arrangement of pages for a book on the printer’s sheet in a way that it appears in the correct order after the sheets are folded and trimmed), digital illustration techniques, standard paper sizes, and weights. In each of the three project stages (Table 1) many formative feedback sessions were held for giving clarity on tasks. The feedback sessions helped set course expectations where the highlight was an open dialogue amongst students and instructors while respecting students’ voices and choices.

Table 1. Breaking down of tasks for scaffolding

Project Stages	Breaking down of tasks for scaffolding
Stage 1	Analysis of published books Analysis of work of known publication designers Design brief User understanding Concept generation Content collection and management Print production planning—book size, paper choice, binding, printing method, bleed margin, software selection Layout planning—grids, margins, columns, gutter-space Typographic decisions—selection of type, point size, type pairing, leading, kerning, drop letters, indents, page numbers, text hierarchy Colour—primary and secondary colour palettes Image creation—illustration design, photography Image management—scanning, image size, resolution, cropping, editing, colour mode Visual language design Visual system design Book cover design
Stage 2	Prototype Feedback Corrections and improvement

Stage 3	Artwork development—document size, image size, file format, resolution, colour profile, crop marks, type outline Specification sheet Artwork approval Proofs Final printing
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Note: Students considered printing technicalities for taking design decisions throughout the course. Some intermediate tasks under each stage were iterative and not necessarily in the same sequence

End Product

The end product is a result of an act of designing that employs the design process. The course resulted in four books designed by students for Institute’s library. The books were elaborate with the number of pages ranging from 188- 368. These books represented the solution proposed by the students that reflected the development of their knowledge.

RESULT AND DISCUSSION

This segment presents the research findings in four sections-teamwork, interpersonal, communication, and project management skills. Table 2 - Table 5 report the result of the questionnaire and semi-structured interviews. Group A interview participants are referred to as Participant A1, Participant A2, Participant A3, Participant A4 with the same coding method followed for all the groups. There is a discussion of, to what extent collaboration over the project under PBL fostered essential professional skills amongst learners.

Section A - Teamwork

Table 2 presents the integrated result of Section A on teamwork.

Table 2. Integrated results for theme - teamwork

Statements	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
A1. I was able to achieve much more in a group than what I would have managed alone Participant B3: “Working in a group is helpful. If I think of doing this book on my own, I will never be able to produce this kind of result on my own.”	51.5%	33.3%	12.1%	3.0%	0.0%
A2 Good teamwork is essential for the success of a project Participant B3: “There were some four hundred pages which were in the book. We wouldn’t have been able to do it if there was no proper synchronization in the group.”	57.6%	33.3%	9.1%	0.0%	0.0%
A3. All members of the group shared the team’s responsibilities Participant A1: “One or two people who were not enjoying it as much so we were basically bringing out their best and pushing them.”	15.2%	48.5%	36.3%	0.0%	0.0%
A4. Each member of the group was encouraged to give inputs Participant B2: “I feel like we all had different skill sets we could bring together all of that diverse skills in the book.”	33.3%	45.5%	18.2%	3.0%	0.0%
A5. Mutual exploration and constructive feedback from group members led to better understanding concepts Participant C3: “We had different opinions also; it helped us in learning new things. If someone has a different opinion, we would argue or maybe discuss with each other, we got different viewpoints to implement and make our work better.”	39.4%	48.5%	12.1%	0.0%	0.0%

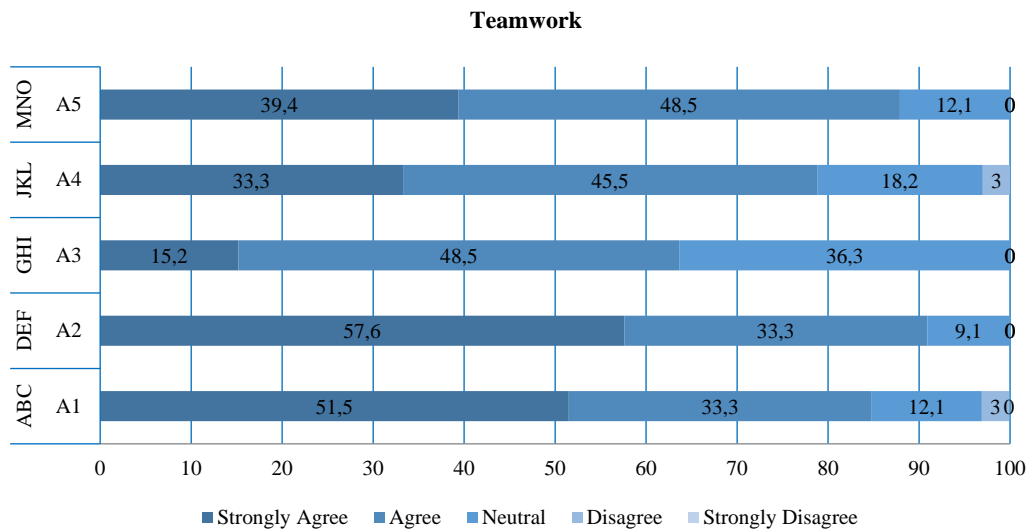


Figure 2. Presentation of quantitative data for teamwork

Students were asked to respond to questions related to teamwork (A1) 84.8% agreed they could achieve much more in a group than what they would have managed alone, and 84.8% agreed that for the success of a project, good teamwork is essential (A2). When asked if all group members shared the team’s responsibilities, 36.3 % gave a neutral response. However, 63.7% agreed with the statement (A3). Each group member was encouraged to give inputs 78.8% of respondents agreed with the statement (A4). The majority of respondents -87.9% agreed that mutual exploration and constructive feedback from group members led to a better understanding of concepts (A5).

Findings show that students managed to work successfully in groups to achieve desired results in project work. However, some concern is noticed regarding the equal participation of group members. In statement A3, 36.3% of students have taken a neutral position. The response of participant A1 in the interview suggests that there may have been some students who were not as motivated as others and needed a push to work towards set goals.

Section B - Interpersonal Skills

Table 3 presents the integrated result of Section B on interpersonal skills.

Table 3. Integrated results for theme - interpersonal skills

Statements	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
B1. Working in the group helped me to build closer connections with group members	39.4%	39.4%	18.2%	3.0%	0.0%
Participant A3: “Group projects help develop personal relationships with other people.”					
B2. We were able to resolve differences and reach to decisions	36.4%	45.5%	18.2%	0.0%	0.0%
Participant B2: “We resolved all of the problems within the group and I think the group dynamics were nice.”					
B3. Working in a team helped me in building rapport with fellow students	33.3%	57.6%	9.1%	0.0%	0.0%
Participant C3: “We also build a very good connection with each other.”					
B4. I learnt to respect different voices in the group.	48.5%	51.5%	0.0%	0.0%	0.0%
Participant B2: “I feel like all of us were quite respectful of the other person and understood when the point was justified so we worked well.”					

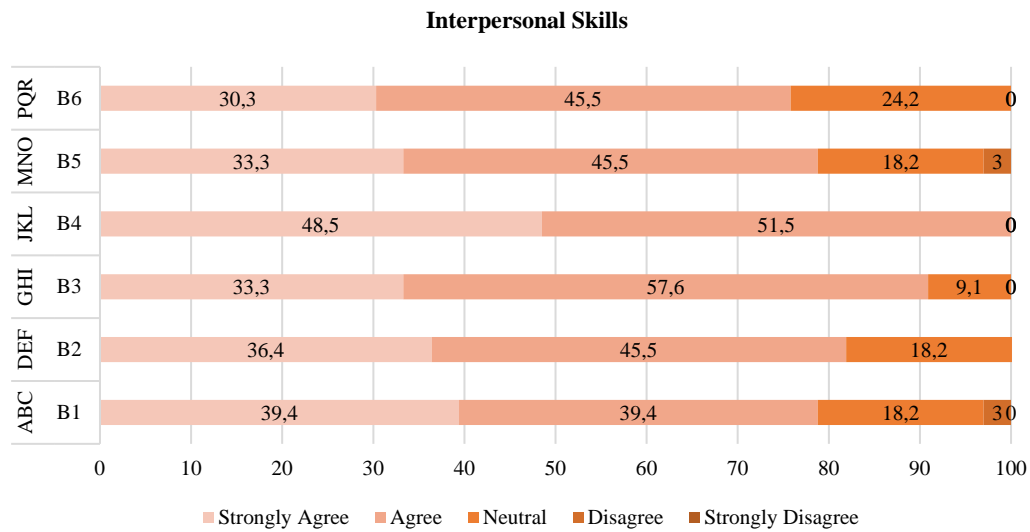


Figure 3. Presentation of quantitative data for interpersonal skills

The student sought a response to four statements to ascertain the development of interpersonal skills. The majority of the respondents or 78.8% agreed that working in the group helped them to build closer connections with group members (B1). A total of 81.9% of respondents agreed that they were able to resolve differences and make decisions (B2). Most respondents (90.9%) agreed that working in a team helped build rapport with fellow students (B3). All respondents, 100% agreed that they learned to respect different voices in the team (B4). The findings of this section suggest the development of interpersonal skills as an outcome of working together. Students learned to be respectful of others’ opinions and perspectives.

Section C - Development of Communication Skills

Table 4 presents the integrated result of Section C on communication skills.

Table 4. Integrated results for theme - development of communication skills

Statements	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
C1. I got opportunities to articulate my own point of view in the group Participant A2: “During the discussions, everybody was vocal including me.”	48.5%	51.5%	0.0%	0.0%	0.0%
C2. I was able to resolve conflicts through discussions and negotiations Participant C3: “We had managed to sit together and resolve the conflicts by discussing what all problems we were facing while combing the sections.”	36.4%	51.5%	12.1%	0.0%	0.0%
C3. My group members listened well to each other’s ideas Participant A2: “Even if the thing was not relevant everybody used to listen and that builds the confidence.”	36.4%	51.5%	9.1%	3.0%	0.0%
C4. There was good communication amongst group members. Participant C3: “We all managed to take out time and discuss everything.”	18.2%	54.5%	24.2%	3.0%	0.0%
C5. I was able to communicate effectively with peers in my team Participant C2: “We brought the idea to the table and then that idea was discussed. So, it was almost like we are presenting every time our ideas.”	36.4%	54.5%	6.1%	3.0%	0.0%

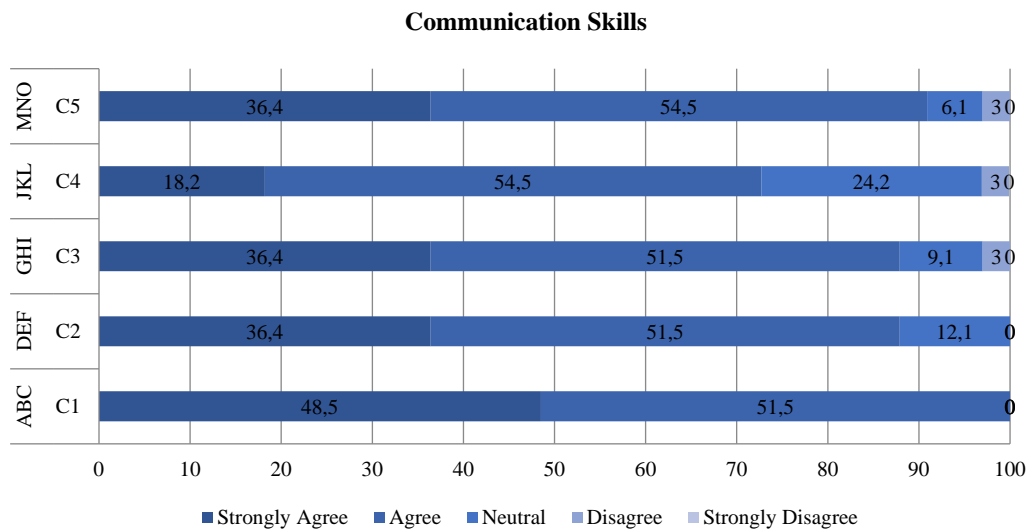


Figure 4. Presentation of quantitative data for communication skills

All (100%) respondents agreed they got opportunities to articulate their point of view in the group (C1). Most respondents, 87.9% agreed that they were able to resolve conflicts through discussions and negotiations (C2). The majority of the respondents, 87.9% agreed that their group members listened well to each other’s ideas (C3). The majority of the respondents, 72.7% agreed that there was good communication amongst group members (C4). Findings show that 90.9% agreed that they could communicate effectively with peers in the team (C5).

Collaborative learning kept learners actively engaged and presented opportunities to discuss, articulate, defend ideas, exchange viewpoints, and broaden thought horizons. They developed the patience to listen and respect others’ perspectives during the design process. In Statement C4, 24.2% of respondents took a neutral position when asked if there was good communication amongst team members. There is a little communication gap evident here. Close monitoring of the group activities and intervention of the instructors at the right time can help tackle communication gaps.

Section D – Goal-setting and Project Management Skills

Table 5 presents the integrated result of Section D on Project Management Skills.

Table 5. Integrated results for theme – goal-setting and project management skills

Statements	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
D1. We were able to plan and manage our work well Participant A1: “We used to literally list down everything we had to do in a day and then we had our stations so we used to go to our stations and work.”	24.2%	51.5%	18.2%	6.1%	0.0%
D2. We managed to finish all our tasks to meet project deadlines Participant D1: “Goal-setting was done throughout the course but there were certain goals that we could not achieve on time like we had planned. So for those we put in some extra hours and some extra days.”	21.2%	51.5%	24.2%	3.0%	0.0%
D3. Goal-setting helped me to learn to manage my time. Participant C3: “For the first half I had to do illustrations and Smith would do the layout, and in the second half I would work on the layouts and Smith would work on the illustrations. This is how we managed our time.”	27.3%	54.5%	12.1%	6.1%	0.0%
D4. I was able to overcome hurdles and difficulties to reach the final goal of book design Participant D2: “We were setting up daily goals but some days there were technical issues with software and there were conceptual issues and general issues but by the end, everything was done nicely.”	24.2%	72.7%	3.0%	0.0%	0.0%
D5. The project increased my understanding of how to plan, manage my time Participant D3: “Two of us were in editing and compiling the information so we made a Google document amongst ourselves and divided the topics so we could both work simultaneously and proofread our own work so that it was faster.”	36.4%	51.5%	9.1%	3.0%	0.0%

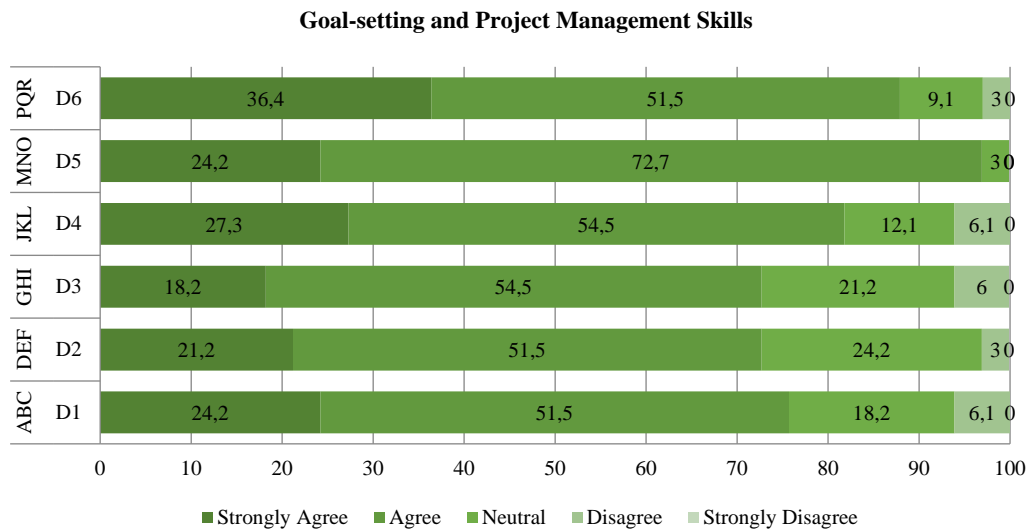


Figure 5. Presentation of quantitative data for goal-setting and project management skills

Students were asked to respond to questions related to developing project management skills; 75.7% of respondents agreed that they could plan and manage their work well (D1), and 72.7% agreed that they managed to finish all their tasks to meet project deadlines (D2). A vast majority of participants, 81.8% agreed that goal-setting helped them to learn to manage time (D3). Findings reflect that most of the respondents, 96.9% agreed that they were able to overcome hurdles and difficulties to reach their final goal (D4). In addition, 87.9% admitted that the project increased their understanding of planning and managing their time (D5).

The study results show that the participants understood the scale of the project, its complexity and the importance of project planning and management. They filled in for others in emergencies. This indicates a very mature and responsible behaviour on the part of learners where the focus was on the goal accomplishment rather than getting deterred by diverging situations. Goal-setting and good project management helped achieve desired results.

Discussion of Semi-structured Interview

The interview process led to a much deeper understanding of participants' perceptions and helped to understand the quantitative data. The results of the quantitative and qualitative phases support and complement each other well and there were no contradictions found. The quotations of the interview participants discard any doubt regarding the effectiveness of collaboration under PBL in developing essential professional skills. The responses strongly support the development of teamwork, communication, and interpersonal skills. Participants' responses reflected the desired goals were reached through project planning and setting a timeline for tasks.

CONCLUSION

Future graphic designers must enter the workspace well equipped with design skills and skills to collaborate, communicate, plan & organize work, and resolve interpersonal conflicts. Graphic designers no longer work in isolation. They collaborate over projects with multidisciplinary teams analysing problems from different vantage points, applying disparate skills. Findings of the study indicate that under PBL, students are getting equipped with essential professional skills needed in the twenty-first-century work environment. Collaboration with peers in PBL creates an environment for developing a repertoire of skills useful in the workplace. Thus, it is an important vehicle to develop some important skills for future graphic designers. It is evident that participants utilised individual strengths to make a valuable contribution and seemed satisfied with the heterogeneous skills group. Conversely, it can be argued that a proper balance is required on the part of the

instructors so that while learners utilise their strengths optimally, they also come out of their comfort zones to explore different learning materials adequately.

Tolerance and respect are essential aspects of living in a community. Connecting, communicating, and understanding varied viewpoints contextually to solve problems are critical for designers. Tolerance and respect are essential character traits fostered in collaborative pursuits. It was evident that the project of the given scale was possible due to the collaborative format of different minds working together allowing learners to break away from the linear thought process. It can be argued further that proper monitoring of group working mechanisms needs to be in place to ensure equal participation of each group member. Some literature uses the term *free riding*. It refers to the students who take advantage of being in a group and avoid working adequately or contributing their part. This behaviour can be demotivating and frustrating for others who share the credit of their hard work with some defaulters. Thus, in a group situation, the timely intervention of the instructor is imperative for proper group management. Nonetheless, students' responses indicated that PBL indeed fostered the development of essential professional skills by allowing working in collaboration on authentic tasks that offered adequate challenges that resulted in concrete outcomes.

Authors' Contributions

The author contributed 100% to the study.

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Competing Interests

There is no potential conflict of interest

Ethics Committee Declaration

The Institutional Ethical Committee, Nirma University reviewed and approved the project titled "Graphic Design Education: Generating Real-world Design Opportunities within Academic Institutions to Foster Learning and Facilitate Easier Transition from Academics to Industry". Project No.: IEC/NU/22/ID/01. This paper is an outcome of the aforementioned study.

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