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Survey Analysis of Students' Attitudes in PBL Activities

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Abstract

This paper shows the results of a questionnaire survey conducted in 2023 for students enrolled in PBL courses at the Advanced Institute of Industrial Technology. The purpose of this survey was to develop a unified evaluation index for PBL activities as part of the Institutional Research (IR) activities of the Centre for Research and Education of Highly Skilled Professionals. As a result, it was found that they tend to avoid extremely difficult themes due to their anxiety of completing the course while the students value the originality and novelty of the PBL themes. Furthermore, they expect their PBL themes to be practical by discovering it by their own, rather than being given by someone else. Also, they prefer team-based work to individual work. The PBL faculty members are expected to build good relationships with the students and provide a guidance based on their expertise. While the students want to keep a relationship with the graduate school for the future, it is unclear what type of relationship they need. It would be a future work to be investigated. Finally, the results shows that their expectations for competencies to be acquired through PBL activities were high enough across the board and indicates the willingness of the students to acquire competencies through PBL activities.

Keywords: continuous professional education, project-based learning, PBL assessment scale

1 Introduction

There have been many discussions on the ideal state of Japanese higher education institutions, and in 2018, the "Grand Design for Higher Education Toward 2040 (Report)" was compiled and its policies were established [1]. In the report, the following three directions are proposed as the directions that should be realized in the future [2].

(1) To clarify "what students can learn and acquire" and to provide education that enables students to realize the results of their studies (Omitted).

(2) (Omitted) The acceptance of working adults and international students should be expanded, while maintaining an appropriate scale from the viewpoint of maintaining and improving the quality of education.

(3) There should always be a forum where the grand design of higher education in the region can be discussed (Omitted), and collaboration and integration should be carried out by taking advantage of strengths and characteristics.

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Project-Based Learning (PBL) activities at the Advanced Institute of Industrial Technology (hereafter referred to as "AIIT") are in line with the three directions. PBL activities are an excellent way to acquire practical skills, allowing students to acquire not only theoretical knowledge in a professional field, but also the skills and knowledge necessary for practical work. Through the opportunity to work on practical problems in PBL, students can also acquire problem-solving skills that enable them to deal with complex problems. In addition, students can acquire the ability to collaborate with teams and clients, which is necessary for the promotion of projects. Thus, students who have experienced PBL activities are expected to be active immediately as highly specialized professionals.

On the other hand, it is not easy to facilitate PBL activities. The PBL activities have been established through the ingenuity and efforts of many faculty members at AIIT. Their efforts have been reported in our bulletin and various research presentations and papers and have been of help to faculty members of higher education institutions who conduct PBL activities. However, the scope and content of PBL activities and the number of students participating in them are becoming increasingly diverse, and extensive and continuous surveys and research on PBL activities are needed.

The authors' effort is aimed at developing a unified evaluation index for PBL activities as part of the IR (Institutional Research) activities of the Center for Research and Education of Advanced Professionals established at AIIT. While existing research has focused on research results from the viewpoint of faculty members who implement PBL, this research aims to clarify the results and adverse effects of PBL activities by analyzing them from the viewpoint of students who engage in PBL activities. In this paper, we report on the results of a questionnaire analysis of the preliminary expectations of students who will conduct PBL activities this academic year.

2 Research on PBL

The term "PBL" is often confused because it is used as an abbreviation for Problem Based Learning as well as Project Based Learning. According to Maskawa et al., the two types of PBL have in common a learning method that emphasizes the learner's independence and includes elements of cooperative learning. The difference is that Project Based Learning emphasizes the process of problem discovery and problem solving by the learners themselves, while Problem Based Learning aims at the acquisition of knowledge required in a specific field [3].

According to Wolk's research, the first person to implement PBL is Kilpatrick, an American educationalist [4]. Kilpatrick, who taught at the Teachers College (Graduate School of Education) of Colombia University for a long time, pointed out the following in his article "The Project Method" published in 1918. In other words, children live under a kind of moral stress in their own society. Therefore, it is necessary for teachers with sufficient skills to free children from such stress by providing them with project-based learning, and to help them develop as individuals with a purpose. It is also important for schools to provide children with "purposeful activities" based on the projects they have completed. Although the term "PBL" is not used in the paper, it has many suggestions that can be considered the origin of today's PBL. Wolk himself, from his own experience in the field of education, stated that "children

are intrinsically motivated when they are entrusted to choose what to explore and what to retreat from. Of course, they are willing to exert themselves and strive for the best results.
Thomas cites a definition from the PBL Handbook for Teachers, which defines PBL as follows: "PBL is project-based learning. PBL is a project-based learning model that involves complex problem-solving activities. In these activities, students are given the opportunity to work autonomously over an extended period of time on tasks ranging from problem design, problem solving, decision making, and research activities, with a final product required" [5]. In this way, students work in project teams and cooperate with each other, so PBL can be described as an organized learning model.
Prior & Forwood et al. are an example of such studies [6]. Prior & Forwood et al. In other words, students create knowledge and skills effective for solving problems they face in the real world through the mutual integration of dogmatized knowledge acquired in lectures, etc., and new knowledge generated by applying that knowledge in actual project activities and reflecting on the results of those activities. Furthermore, Blumenfeld et al. consider PBL from the viewpoint of motivation. In traditional educational systems, students tend to focus on lectures and homework assignments, whereas in PBL, students are responsible for the entire learning process of the project, and instructors play the role of facilitators to promote effective learning. By creating such a learning environment, students are encouraged to become interested in the value of the project and to strive to perceive and achieve the required competencies on their own. This will ultimately lead to the development of students' problem-seeking (analytical) and problem-solving abilities.
Research on PBL at AIIT has been actively conducted since immediately after the start of AIIT courses. This section surveys the previous PBL-related research conducted at the university, with a particular focus on research related to human resource development.
Chubachi addresses education and PBL for fostering architects of information systems, and mentions the development of effective teaching materials and teaching methods [7]. Akiguchi examines PBL from the viewpoint of programmer training, and conducts research from the viewpoint of fostering human resources who can lead software development through PBL activities, not just programming techniques [8]. Narita similarly points out the importance of fostering human resources who can plan and propose business models in software development, not just programming skills [9].
Globalization of PBL research has also been studied. Narita et al. focused on the necessity of fostering human resources who can play an active role in a global environment as offshore development of software development and product introduction into overseas markets progresses, and examined the possibility of globalization of PBL education[10]. Subsequently, Chubachi et al. reported on the results of actual global PBL with Vietnam National University[11] and verified the feasibility verified by Narita. After that, Tsuchiya et al. also executed global PBL with Brunei University in addition to Vietnam National University[12] , and the verification of global PBL is still being conducted on an ongoing basis.
In the course of these studies on PBL, the goals of PBL education and indicators for evaluating the achievement of these goals have become increasingly important. Tozawa noted that the expectations of the human resources sought by industry have been changing, and mentioned the importance of goals in PBL education [13]. Subsequently, Osaki et al. conducted

a survey and analysis of the needs of industry, and their questionnaire analysis revealed the importance of knowledge related to specialized fields, as well as the expectation to provide learning support such as motivation and learning opportunities aimed at acquiring knowledge and skills [14]. Matsuo et al. proposed an educational program to realize the model and examined the competencies required for the model [15].
The above is an overview of research on PBL at AIIT, but there has been no active research on evaluation indices from the viewpoint of students taking PBL courses. In their study on manufacturing PBL, Chen et al. conducted questionnaire analysis of students during the PBL period and examined the gap between students' expectations and the actual situation with respect to those expectations and the problems arising from the gap, but the subject was limited to some students [16].

3 Analysis

In this study, the authors plan to conduct a questionnaire survey on the expectations for PBL activities before the PBL activities and to evaluate the results of the survey after the completion of the PBL activities. The following section presents the results of the analysis of prior expectations before PBL activities.

Data

The survey items analyzed are from the survey conducted in FY2023 for students who took PBL courses at the AIIT. The questions consisted of 75 questions in six main categories, including expectations of the PBL theme and expectations of the PBL activity. Responses to the questions were obtained using a 5-point Likert scale. A summary of the survey is shown in Table 1.

Methods

The responses obtained using the 5-item Likert scale were scored on a scale of 1 to 5 based on the questionnaire data of the subjects who responded to the target questions, and the overall mean was calculated. In addition, the mean values were calculated for the courses to which the students belonged, i.e., Business Systems Design Engineering Course, Information Systems Architecture Course, and Innovation for Design and Engineering Course.

Results

The results of the average calculation are shown in Table 1 (the highest score among the three courses is shown in green, and the lowest score is shown in red). Characteristic results are described below.

Regarding the PBL theme, the respondents had high expectations for originality (mean score: 3.92) and novelty (mean score: 3.79). Regarding the difficulty of the problem, the expectation that the problem is easy to solve (mean score: 2.63) was low, but the expectation that the problem is difficult to solve (mean score: 3.37) was also not high. The mean scores for the practical and academic themes were 4.18 and 3.36, respectively, with the practical theme scoring higher. Regarding the selection of themes, the respondents had higher expectations for themes that they

Questionnaire items	Total(n=84)		a.Business		b.Information		c.Design		F	comparison between groups
	Average statistics	SD statistics	Average statistics	SD statistics	Average statistics	SD statistics	Average statistics	SD statistics		
Originality	3.92	1.132	4.17	0.924	3.56	1.246	4.32	0.900	4.377 *	c > b
Novelty	3.79	1.173	4.00	0.970	3.37	1.240	4.32	0.945	6.217 ***	c > b
Social Issues	3.83	1.297	4.17	1.200	3.61	1.321	3.96	1.306	1.333	
Familiar Issues	3.86	1.132	3.67	1.283	3.78	1.107	4.12	1.054	1.024	
Profitability	3.18	1.184	3.39	1.335	3.12	1.122	3.12	1.201	0.356	
Publicness	3.55	1.284	3.67	1.237	3.22	1.235	4.00	1.291	3.120 *	
Easy to solve	2.63	0.833	2.44	0.856	2.68	0.756	2.68	0.945	0.569	
Difficult to solve	3.37	0.929	3.67	1.029	3.20	0.872	3.44	0.917	1.748	
Requires broad knowledge	3.88	0.827	3.94	0.873	3.78	0.852	4.00	0.764	0.608	
Requires in-depth specialized knowledge	4.05	0.904	4.06	0.802	3.88	0.954	4.32	0.852	1.898	
Practical	4.18	0.907	4.00	1.138	4.29	0.814	4.12	0.881	0.720	
Academic	3.36	1.071	3.17	1.098	3.27	1.096	3.64	0.995	1.306	
Linked to own career and experience	4.00	1.087	3.89	1.079	4.05	1.048	4.00	1.190	0.133	
Linked to courses you have taken	3.87	0.991	3.89	0.963	3.71	1.078	4.12	0.833	1.362	
Domestic themes	3.23	1.134	3.50	1.339	3.05	1.071	3.32	1.069	1.115	
Global theme	3.40	1.043	3.22	1.114	3.22	1.013	3.84	0.943	3.271 *	c > b
Themes proposed by someone else	2.63	0.967	2.61	1.037	2.78	0.881	2.40	1.041	1.214	
Themes found by yourself (in a project)	3.70	0.967	4.17	0.924	3.37	0.888	3.92	0.954	5.794 ***	a>b, c>b
Themes worked on by all PT members	3.92	1.044	3.83	1.295	4.02	0.935	3.80	1.041	0.426	
Theme to be worked on by an individual	3.38	1.161	3.72	0.895	2.95	1.284	3.84	0.850	6.244 ***	a>b, c>b
Cooperative activity by PT (Project Team)	4.01	1.012	3.89	1.183	4.05	0.947	4.04	1.020	0.166	
Independent activity by an individual	3.57	1.021	4.00	0.907	3.17	1.093	3.92	0.702	7.109 ***	a>b, c>b
Shortest possible activity time	3.17	0.955	2.78	1.003	3.41	0.894	3.04	0.935	3.265 *	b>a
As long as possible	2.89	1.042	3.33	0.767	2.51	1.028	3.20	1.041	6.104 ***	a>b, c>b
Face-to-face exercises	3.25	1.171	3.56	1.097	2.83	1.181	3.72	0.980	5.898 ***	c > b
Online exercises	3.68	1.043	3.50	0.924	3.95	0.999	3.36	1.114	2.964	
Use of Yume-Kobo facilities	2.95	1.171	2.50	0.924	2.68	1.105	3.72	1.100	9.374 ***	c>a,b
Use of PBL exercise room	3.31	1.172	3.67	0.767	3.00	1.304	3.56	1.083	2.973	
Activities with early career PT members	3.04	0.987	2.89	0.900	3.05	0.973	3.12	1.092	0.289	
Activities with career-oriented PT members	3.89	0.944	3.83	1.150	3.95	0.947	3.84	0.800	0.150	
Activities with PT members of the same	3.23	0.974	3.06	1.110	3.20	1.005	3.40	0.816	0.690	
Activities with PT members of various	4.00	0.944	4.11	1.079	3.85	0.910	4.16	0.898	0.975	
Activities with PT members of high	4.07	0.875	4.17	1.098	3.95	0.805	4.20	0.816	0.759	
Activities with PT members of high homogeneity	2.83	0.903	2.44	0.922	2.93	0.905	2.96	0.841	2.197	
Guidance and advice from senior PTs	3.63	1.073	3.56	1.097	3.49	1.165	3.92	0.862	1.327	
Acceptance of PTs	3.89	1.018	3.94	1.162	3.83	1.046	3.96	0.889	0.154	
Cooperation with activities of other PTs	3.43	1.056	3.61	1.145	3.24	1.044	3.60	1.000	1.232	
Cooperation with activities of external	3.83	1.096	4.17	1.098	3.46	1.185	4.20	0.707	5.010 ***	c>b
Activities based on an empirical approach that	3.85	0.925	3.83	0.707	3.76	1.019	4.00	0.913	0.536	
Activities based on a theoretical approach that	3.71	0.886	3.72	0.752	3.56	1.026	3.96	0.676	1.599	
Presentations of activities at conferences,	3.68	1.110	3.83	0.924	3.56	1.246	3.76	1.012	0.466	
Guidance in the area of expertise of the faculty	4.50	0.843	4.67	0.840	4.29	0.901	4.72	0.678	2.532	
Guidance on general knowledge	3.69	1.075	3.67	1.237	3.56	1.119	3.92	0.862	0.869	
Management of PBL activities	3.76	0.977	3.94	0.873	3.51	1.121	4.04	0.676	2.780	
Facilitation of PBL activities	3.55	1.091	3.78	1.003	3.20	1.167	3.96	0.841	4.713 *	c>b
Involvement of students in each other's	3.62	1.052	4.11	0.900	3.32	1.059	3.76	1.012	4.182 *	a>b
Good relationship with faculty	4.51	0.898	4.56	0.784	4.37	0.968	4.72	0.843	1.241	
Continuation of PBL activities after completion	3.48	1.092	3.61	1.195	3.20	1.100	3.84	0.898	3.024	
Advancement to other universities	3.44	1.283	3.44	1.097	3.51	1.287	3.32	1.435	0.171	
Starting a business	3.37	1.200	3.33	1.237	3.22	1.173	3.64	1.221	0.962	
Finding a job or changing jobs	3.38	1.289	3.11	1.323	3.29	1.309	3.72	1.208	1.368	
Salary increase/promotion within your	3.18	1.194	3.06	1.056	3.41	1.204	2.88	1.236	1.707	
Ongoing relationship with graduate school	3.96	1.058	4.11	1.231	3.78	1.061	4.16	0.898	1.227	
Communication skills	3.81	1.156	3.61	1.243	3.85	1.152	3.88	1.130	0.336	
Ability for continued study and research	4.29	0.951	4.28	0.826	4.10	1.091	4.60	0.707	2.230	
Ability to work in a team	4.05	0.930	4.00	0.840	4.17	0.919	3.88	1.013	0.785	
Ability to solve problems	4.38	0.877	4.39	0.979	4.37	0.888	4.40	0.816	0.012	
Knowledge acquisition skills	4.42	0.839	4.17	0.924	4.46	0.840	4.52	0.770	1.054	
management skills related to development,	4.04	0.924	4.00	0.970	4.12	0.954	3.92	0.862	0.382	
ability to plan comprehensively	4.04	1.069	4.22	1.003	3.85	1.152	4.20	0.957	1.168	
Ability to come up with innovative concepts and	3.99	1.000	4.11	0.963	3.71	1.101	4.36	0.700	3.709 *	c>b
Social and market perspectives	4.04	1.103	4.28	1.018	3.83	1.160	4.20	1.041	1.445	
Needs analysis	3.93	1.073	4.33	0.907	3.68	1.171	4.04	0.935	2.585	
Modeling and system proposals	4.17	0.903	4.17	0.857	4.00	1.000	4.44	0.712	1.883	
Management skills	3.93	0.902	4.06	0.873	3.93	0.985	3.84	0.800	0.294	
Negotiation skills	3.79	1.031	3.83	0.924	3.71	1.146	3.88	0.927	0.238	
Documentation skills	3.93	1.003	3.94	0.998	3.90	1.044	3.96	0.978	0.028	
Creative thinking skills to propose plans and	4.08	0.984	4.06	1.162	3.93	0.905	4.36	0.952	1.532	
Expressive skills such as verbal and non-verbal	4.08	1.055	3.94	1.211	4.12	1.005	4.12	1.054	0.195	
Functional design, emotional design, and the	3.99	1.024	3.67	1.283	3.83	0.972	4.48	0.714	4.641 *	
Development skills to perform preparation,	3.96	1.058	3.67	1.188	3.95	1.094	4.20	0.866	1.347	
Usability, market research, and business process	3.94	0.998	3.89	1.231	3.83	0.892	4.16	0.987	0.880	
Acquiring a degree	4.45	0.884	4.06	1.056	4.49	0.925	4.68	0.557	2.793	
Personal growth	4.61	0.850	4.44	1.042	4.54	0.951	4.84	0.374	1.422	
Overall PBL activities (Overall expectations for	4.38	0.877	4.33	1.138	4.27	0.895	4.60	0.577	1.149	

Figure 1. Results of survey analysis

(projects) found on their own (mean score of 3.92) than for themes that were proposed by someone else (mean score of 2.63). In addition, when asked how they would tackle the theme, expectations were higher for a theme that all PT members would tackle together (mean score: 3.92) than for a theme that they would tackle individually (mean score: 3.38).

Expectations for PBL activities were higher for online practice activities (mean score of 3.68) than for face-to-face practice activities (mean score of 3.25). For the question about PT members, the expectation of working with PT members of various generations (mean score of 4.00) was higher than the expectation of working with PT members of the same generation (mean score of 3.23). The mean score was 3.23. Furthermore, when asked about the characteristics of PT members, the respondents' expectations for activities with highly homogeneous PT members (mean score of 4.07) were higher than their expectations for activities with highly heterogeneous (diverse) PT members (mean score of 2.83). Regarding PBL instructors, students had very high expectations for guidance in their field of expertise (mean score of 4.50), and equally high expectations for a good relationship with their instructors (mean score of 4.51). Regarding the future after completing PBL, expectations for a continuous relationship with the graduate school (mean score of 3.96) were high, as were expectations for continuing PBL activities after completion (mean score of 3.48), starting a business (mean score of 3.37), and finding a job or changing jobs (mean score of 3.38).

Finally, expectations for abilities acquired through PBL were particularly high for knowledge acquisition (mean score 4.42), problem solving (mean score 4.38), and ongoing research and study (mean score 4.29), but expectations for abilities acquired were high across the board. Overall expectations for PBL in general (mean score of 4.38) were also very high.

4 Discussion

Based on the results of the analysis in the previous section, this section discusses the background to the results of the questionnaire, with a focus on comparisons with the results of the analysis by Chen et al.

The high expectations for originality and novelty can be considered an indication of the students' desire to engage in activities that lead to new values that do not exist in current society. In the survey conducted by Chen et al. (2010), interest in the PBL theme was cited as a factor affecting satisfaction with PBL, and it can be assumed that if the PBL theme does not have sufficient originality and novelty, students' interest will be reduced. The importance of setting PBL themes is high in order to meet the expectation of originality and novelty.

Regarding the degree of difficulty of the problems that form the basis of the PBL themes, the expectation for easy solutions was low, but the expectation for difficult solutions was not high either, indicating a tendency that cannot be said either way. While students are interested in working on challenging problems rather than easy problems, they are also conscious of the fact that they will be completing their degree, and are therefore hesitant to work on too difficult problems. Although questions similar to this question were not asked in the Chen et al. survey, the results of this questionnaire are convincing from the experience of teaching PBL activities, and it can be considered necessary to aim to tackle themes of a certain level of difficulty within the PBL period by providing appropriate guidance. The results of this questionnaire are convincing.

The practical theme had higher expectations than the academic theme. Regarding the selection of themes, the respondents had higher expectations for themes that they (projects) found on their own (mean score 3.92) than for themes that were proposed by someone else (mean score 2.63). As mentioned earlier, the importance of setting PBL themes can be seen in the results of the responses to this question. In the case of presented PBL themes, students may lose the originality and novelty that they feel, and it is important for students to search for PBL themes on their own initiative.

In addition, when asked about their expectations of how to tackle the theme, students had higher expectations for the theme to be tackled by all PT members (mean score: 3.92) than for the theme to be tackled by each individual (mean score: 3.38). It can be assumed that students are aware that they can challenge difficult themes by working on them as a team. However, Chen et al. also found that some teams did not function well once the team activities actually started. We believe that future research should clarify the causes of such results that are contrary to students' expectations.

Expectations for online PBL activities (mean score of 3.68) were higher than expectations for face-to-face PBL activities (mean score of 3.25). In the course evaluation questionnaire at AIIT, the evaluation of online lectures was generally high, except for courses with hands-on practice, indicating that students expect online practice in PBL activities as well.

Expectations regarding the duration of the activities were short (mean score: 3.17) and long (mean score: 2.89). The results of the survey indicate that the students as a whole expected neither, but the results for each course show a different picture. While the average scores of the students in the Business Systems Design Engineering Course and the Innovation for Design and Engineering Course are close to neutral, the students in the Information Systems Architecture Course have clearly lower expectations for short activity time (average score of 3.41) and longer activity time (average score of 2.51) than the students in the other courses. We would like to continue to investigate the origin of the Information Systems Architecture Course students' attitudes toward activity time.

In the question about PT members, the expectation of working with PT members of various generations (mean score 4.00) was higher than the expectation of working with PT members of the same generation (mean score 3.23). Furthermore, when asked about the characteristics of PT members, the expectation of working with PT members with high homogeneity (mean score of 4.07) was higher than the expectation of working with PT members with high heterogeneity (diversity) (mean score of 2.83). In the study by Chen et al., the influence of member characteristics and attributes, such as relationships, member contribution, and the balance between working adults and recent graduates, on the success factors of PT was also verified. It is safe to say that students are aware of and expect a diverse membership with various generations and backgrounds as a factor for the success of PT.

Expectations of the PBL instructors were very high in terms of guidance in their area of expertise (mean score of 4.50), and expectations of a good relationship with the instructors (mean score of 4.51) were equally high. In the survey conducted by Chen et al., faculty guidance was mentioned as one of the reasons why PT was not successful, suggesting the importance of building a good relationship with students in PBL and providing guidance based on their expertise.

Regarding the future after completing PBL, the respondents' expectations for a continuous

relationship with the graduate school (mean score of 3.96) were high, but their expectations for continuing PBL activities after completing PBL (mean score of 3.48), starting a business (mean score of 3.37), and finding a job (mean score of 3.38) were close to neither. Since no survey has been conducted on this point, it is necessary to conduct interviews with students and study measures necessary to continue the relationship with students in the future.

Expectations for competencies to be acquired through PBL were particularly high for knowledge acquisition (mean score: 4.42), problem solving (mean score: 4.38), and continuous research and study (mean score: 4.29), while expectations for competencies to be acquired were high across the board. This is a good indication of the students' willingness to acquire competencies through PBL activities. In their analysis, Chen et al. point out that the involvement of teachers is very important in the process of acquiring competencies. We would like to analyze and evaluate the correlation between students' pre-expectations for acquiring the competencies and post-evaluations of their future plans to acquire the competencies, as well as post-evaluations of the PBL instructors.

Finally, the high overall expectation of PBL in general (mean score of 4.38) suggests that many students expect to have opportunities for growth through PBL activities. All PBL instructors must be aware that they are required to work to minimize or exceed the gap between their students' expectations and their own prior expectations as much as possible.

5 Conclusion and Future Issues

As part of the IR activities at the Center for Research and Education of Advanced Professionals, this paper analyzes the survey items conducted on PBL students in 2023 with the aim of developing a unified evaluation index for PBL activities.

As a result, it was found that, while students value the originality and novelty of the PL theme, they tend to avoid extreme difficulty of the PBL theme because they are conscious of completing the course. It was also clear that the students expected to work on practical themes that they discovered on their own, rather than themes given to them by someone else. They hope that the entire team, rather than individuals, will work together to tackle the theme.

In addition, PBL activities tend to be online practice activities that are neither too long nor too short, and of reasonable duration. PT members expect to have a diverse cross-generational composition.

Although they expect PBL faculty members to build good relationships with students and to provide guidance based on their expertise, and they expect a continuous relationship with graduate schools in the future, it is not clear what kind of relationship is expected, and this is an issue for future research.

Finally, expectations for competencies to be acquired through PBL were high across the board, indicating the willingness of students to acquire competencies through PBL activities.

However, this survey was conducted only for students in the year 2023, and the sample size was limited, so it is not sufficient to clarify the full picture of students' expectations. The post-evaluation survey is also scheduled to be conducted in the future, and the analysis is still in its mid-stage.

Continuity is important in this type of survey analysis. We would like to improve the accuracy of the PBL evaluation index while reviewing the survey items on a regular basis.

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