



# Needs assessment for faculty development in dental education, at the University of Health Sciences, Lao PDR

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Due to the short history of dental education in Laos, the educational system is still incomplete, with only a few faculty development (FD) programs. This study aims to identify the needs assessment for FD, in Lao dental education. A survey was conducted, with dentists from the Faculty of Dentistry, in 2022. Data on demographics, perceived importance, and ability, on the 13 roles and competencies of teachers, as well as the 26 FD items' needs assessment were collected. Data were compared between the two groups (lecturers and assistant teachers), and analyzed to identify different needs. Sixty-seven responses were included, after excluding inappropriate ones. Lecturers and assistant teachers expressed their needs for developing a syllabus, and teaching using simulation. Lecturers revealed the need to improve their roles as resource developers, followed by learning facilitators and lecturer in a classroom setting. Assistant teachers reported their prioritized needs for improving their role as on-the-job role models, followed by lecturer in a classroom setting, and mentor, personal adviser, or tutor. Assistant teachers showed higher educational needs scores than lecturers, in most questionnaire items. Although the needs assessment of FD indicates different needs, based on the differing roles and responsibilities, assistant teachers' needs scores are generally higher. An FD program could prioritize the most common needs of both groups at an early stage, but the topics most needed by each group should also be considered. This study can inform a future FD program, to improve Lao dental education.

**Key Words:** Staff development, Needs assessment, Laos, Dental education

## Introduction

Dental education in Lao PDR is young, compared to that of other countries in Asia. In 2007, a 6-year bachelor's program for Doctor of Dental Surgery was established, at the Faculty of Dentistry, University of Health Sciences (UHS)—the only dental school in Laos. A few problems in dental education prevail in Laos. First, most faculty

development (FD) programs focus on dental skills, and not teaching skills. Existing FD programs do not meet the teaching competency, which is lacking for dental education. Second, because the wages of lecturers are low, they are allowed to earn money in the private clinic. There are not enough trained lecturers for clinical training, so dentists working at their private clinics participate in clinical training, as assistant teachers. They are volunteers, and do not undergo enough FD programs for teaching.

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They mainly provide on-the-job training, and are not responsible for developing teaching materials. However, they sometimes conduct classroom teachings, using the lecturer's materials, when asked by lecturers.

FD is critical to maintain, or enhance, effectiveness of the knowledge transfer, considering updates on diagnostic and treatment procedures and technologies, among other changes in medical education [1,2]. Cultivating good faculty is the foundation for training good physicians, who can help improve patient outcomes. Similarly, promoting dental education can help dental students and dentists learn the best practices and current technologies, thereby satisfying patients [1]. To provide quality dental education, clinical as well as educational competency of dental faculties should be improved, for which FD is needed. FD plans can improve faculty members, by broadening knowledge, sharpening skills, and adjusting behaviors tailored to the individual or collective needs, to promote organizational change [1,2].

FD programs should primarily focus on educational practices, evaluation tools, and research. Before beginning an FD program, a needs assessment should be conducted, to increase faculty motivation [3]. Needs assessment is a tool to identify the rationale and context for developing an FD program, and understanding the areas of interest and gaps that need to be addressed through it. A needs assessment can also set priorities for developing an FD program, to improve quality in a particular context, such as education, health, and so forth [3]. A needs assessment can be conducted, by engaging targeted faculty members through personal interviews, focus group discussions, community-level surveys, and the facilitation of municipal meetings [4].

A needs analysis, for FD in dentistry education in Laos has never been conducted, since the establishment of the faculty. Grant [5] suggested several methods of needs assessment. In this study, a gap analysis was chosen, which

is a formal methodology for calculating the needs assessment, by comparing perceived performance to perceived competencies. The purpose of this study is to assess Lao dental educational providers' needs, to improve their educational competencies, and focus on identifying and determining the current shortages in the system. In addition, the needs assessment was compared between lecturers and assistant teachers. These results can be used as a reference, to establish an FD program for dental education. The specific research questions are as follows: (1) What roles and competencies are required, as a teacher in Lao dental education? (2) What FD items are required for Lao dental education?

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## Methods

The study is a cross-sectional descriptive study, that utilizes a self-administered structured questionnaire, as the data collection tool. It obtained ethical approval from the Institutional Review Board of Yonsei University Wonju Severance Christian Hospital (approval no., CR 322012), and the Research Ethics Committee of the University of Health Sciences in Lao PDR (approval no., 325/REC). Written informed consent was obtained from all participants.

The survey components were developed from previous studies, and assessed by three authors, and medical education experts [6,7]. Two previous studies were selected for their extensive coverage of teacher's roles and FD items [6,7]. The survey comprised of socio-demographic data, the roles and competencies of teachers, and FD items' needs assessment. An online interview was conducted, to adjust the survey elements, and make them suitable for the Lao dental education environment. Two Lao dental professors attended the interview, and gave several recommendations for the survey items. Based on

the interview results, one item (preferred personal future commitment) was excluded, and “role of administrator” was added, because one interviewee believed that good administration and management are significant and urgent improvement tasks for FD. Furthermore, two items (concept mapping and clinical precepting) from delivering instruction, and three items (bibliographic database instruction: how to use the database; using educational activities for promotion and tenure; and managing classroom challenges) from general items were excluded, because these activities were not conducted in the context of the Lao dental education. To calculate the needs assessment score for each FD item and teacher’s roles, the Likert scales for the perceived importance (1 [never important] to 5 [very important]) and the perceived competency level (1 [I cannot do it] to 5 [very well]) were used.

The link for Google forms (Google, Mountain View, USA), with survey questions, was sent to 103 dentists at UHS in Laos, via e-mail or WhatsApp. The survey was conducted in April and May 2022. In this study, a lecturer was defined as a full-time instructor and professor, and an assistant teacher as a resident and part-time dental teacher, mainly working in private dental clinics, and voluntarily teaching dental students.

Quantitative data from the socio-demographic and Likert-scale questions were presented as mean  $\pm$  standard deviation or number (%). The chi-square test, or Fisher’s exact test was used to compare the nominal variables, while a t-test was used to compare the continuous variables between the two groups. The formula of Borich [8] was used to calculate needs assessment scores. The needs assessment score is the summation of the difference between perceived importance and perceived competence levels, multiplied by the average importance level, and then divided by the total number of respondents. The ranking was based on the result of the needs assessment

for each element, after comparing them with both groups.

Cronbach’s  $\alpha$  was calculated to determine the reliability of the responses. All data were analyzed by Microsoft Excel 2016 (Microsoft Corp., Redmond, USA) and IBM SPSS ver. 23.0 (IBM Corp., Armonk, USA). All p-value  $<0.05$  were considered as significant.

## Results

A total of 71 people responded to the survey (68.9% response rate). Of these, 67 respondents were analyzed, after excluding four insufficient responses. Cronbach’s  $\alpha$  was 0.971 for all survey items. Forty-three respondents (64.2%) were lecturers, and 24 (35.8%) were assistant teachers. The lecturers were older than assistant teachers ( $41.21 \pm 6.55$  versus  $33.71 \pm 6.36$ ,  $p < 0.001$ ).

Most lecturers (35/43, 81.4%) had more than 10 years of experience, working as faculty. They gave more lectures to large groups, than assistant teachers (34/43 versus 9/24,  $p < 0.05$ ). The main role of the assistant teachers was that of rounds presenter/clinical clerkship (Table 1).

### 1. Roles and competencies of teachers

The most needed competency was developing learning resource materials in the form of computer programs, videotape, or print, which can be used as adjuncts to the lectures and other sessions (score=2.83), followed by the production of study guides to support students’ learning, in the course (score=2.80), lecturing in a classroom setting (score=2.74), and the least necessary was administrator (score=2.44).

When comparing needs assessment, regarding the roles and competencies of lecturers and assistant teachers, the results showed that assistant teachers had higher needs assessment scores than lecturers in all roles except the production of study guides, to support the students’

Table 1. Respondents' Demographic Characteristics and Experience in Education and Faculty Development

Characteristic	Total (N=67)	Lecturers (N=43)	Assistant teachers (N=24)
Age (yr)*	38.52 ± 7.39	41.21 ± 6.55	33.71 ± 6.36
Sex			
Male	26 (38.8)	18 (41.9)	8 (33.3)
Female	41 (61.2)	25 (58.1)	16 (66.7)
Final education level			
Bachelor's degree	27 (40.3)	13 (30.2)	14 (58.3)
Master's degree	37 (55.2)	27 (62.8)	10 (41.7)
PhD degree	3 (4.5)	3 (7.0)	0
Graduated school			
Faculty of Dentistry, UHS	43 (64.2)	25 (58.1)	18 (75.0)
International University	24 (35.8)	18 (41.9)	6 (25.0)
Working for the Faculty of Dentistry, UHS (yr)*			
≤ 3	7 (10.4)	2 (4.7)	5 (20.8)
4-6	8 (11.9)	2 (4.7)	6 (25.0)
6-10	12 (17.9)	4 (9.3)	8 (33.3)
> 10	40 (59.7)	35 (81.4)	5 (20.8)
Current education activity <sup>a)</sup>			
Assessment (including license exam)	24 (35.8)	15 (34.9)	9 (37.5)
Classroom (large group lecture)*	43 (64.2)	34 (79.1)	9 (37.5)
Curriculum development	31 (46.3)	22 (51.2)	9 (37.5)
Rounds presenter/clinical clerkship	58 (80.6)	32 (74.4)	22 (91.7)
Simulations (clinical skill teaching in the lab)	12 (17.9)	9 (20.9)	3 (12.5)

Data are presented as mean ± standard deviation or number (%).

UHS: University of Health Sciences.

\*p<0.05. <sup>a)</sup>Multiple answers allowed.

Table 2. Needs Assessment Scores and Ranks for the Role and Competencies of a Teacher

Category	Role and competencies of a teacher	Needs assessment score (rank)		
		Total (N=67)	Lecturers (N=43)	Assistant teachers (N=24)
Information provider	Lecturer in a classroom setting	2.74 (3)	2.11 (2)	3.90 (2)
	Teachers in a clinical or practical class setting	2.36 (6)	1.92 (6)	3.40 (6)
Role model	On-the-job role models (e.g., in clinics, ward rounds, etc.)	2.04 (9)	1.60 (10)	4.15 (1)
	A role model in the teaching setting	2.15 (8)	1.37 (11)	3.54 (5)
Facilitator	Mentor, personal adviser, or tutor to a student or group of students	1.90 (11)	1.68 (9)	3.72 (3)
	Learning facilitator, e.g., supporting students' learning in small groups, in the laboratory, in the integrated practical class sessions, or in the clinical setting	2.30 (7)	2.11 (2)	3.16 (8)
Examiner	Planning or participating in formal examinations of students	1.73 (12)	1.76 (7)	2.81 (9)
	Curriculum evaluator- evaluation of the teaching program and the teachers	2.43 (5)	1.95 (5)	3.54 (4)
Planner	Curriculum planner, participating in the overall planning of the curriculum through curriculum planning committees	1.53 (13)	1.06 (13)	2.28 (12)
	Course organizer, responsible for planning and implementing a specific course within the curriculum. This may, for example, relate to one system or one theme, or to a special study module	2.00 (10)	1.25 (12)	2.60 (10)
Resource developer	Production of study guides to support the students' learning in the course	2.80 (2)	2.07 (4)	1.68 (13)
	Developing learning resource materials in the form of computer programs, videotape, or print, which can be used as adjuncts to the lectures and other sessions	2.83 (1)	2.45 (1)	3.30 (7)
Administrator	Administrative jobs and communication between peers of departments to manage the educational system	2.44 (4)	1.74 (8)	2.36 (11)

learning in the course. Several items showed a significant gap in ranks, between the two groups. Developing learning resource materials in the form of computer programs, videotape, or print, which can be used as adjuncts to the lectures and other sessions was ranked first by all the lecturers, but seventh by assistant teachers. Learning facilitator, e.g., supporting students' learning in small groups, in the laboratory, in the integrated practical class sessions, or in the clinical setting was ranked second by lecturers, but at eight by assistant teachers. On-the-job role models was ranked first by assistant teachers, and mentor, personal adviser, or tutor to a student or group of students, at third position, although these

showed lower ranks for lecturers. Assistant teachers' needs score were higher than those of lecturers, except production of study guides to support the students' leaning in the course (Table 2, Appendix 1).

## 2. FD items

Developing a syllabus has the highest need assessment score (score=2.49), followed by teaching using simulation (score=2.47), and then learning new technologies (score=2.26), for all respondents. These three items were in the same ranks as the lecturers' needs. Assistant teachers showed the highest need assessment score for teaching using simulation (score=3.93), followed by developing a

Table 3. Needs Assessment Scores and Ranks for Faculty Development Items

Category	Faculty development items	Needs assessment score (rank)		
		Total (N=67)	Lecturers (N=43)	Assistant teachers (N=24)
Preparing for a course	Developing instructional goals and objectives	2.04 (8)	1.80 (11)	3.47 (6)
	Selecting teaching strategies appropriate to goals	2.05 (7)	1.99 (9)	3.16 (10)
	Developing a syllabus	2.49 (1)	2.56 (1)	3.90 (2)
	Identifying learning styles and corresponding instructional examples and uses	2.06 (6)	1.79 (12)	3.58 (5)
	Instructional design	1.30 (23)	0.82 (25)	2.60 (16)
	Designing problem/case-based teaching activities or clinical vignettes	1.92 (11)	2.00 (8)	2.72 (15)
	Preparing materials for the class (handouts and other supplementary materials)	2.18 (4)	1.98 (10)	3.72 (3)
	Developing and using PowerPoint/multimedia presentations	1.90 (12)	2.11 (5)	2.38 (18)
	Constructing quality test questions and evaluating test results	1.43 (20)	0.91 (24)	2.92 (11)
Delivering instruction	Lecture presentation skills	1.86 (13)	1.57 (17)	3.27 (9)
	Teaching strategies beyond the lecture	2.07 (5)	2.22 (4)	2.89 (12)
	Teaching using various "smart" technologies and computers (Google, YouTube, Quiz app, and so forth)	1.85 (14)	2.10 (6)	2.23 (20)
	Conducting hybrid (mix of face-to-face and online) and online classes	0.90 (26)	0.93 (23)	1.07 (26)
	Encouraging student participation in classes	1.55 (19)	1.69 (14)	1.85 (23)
	Facilitating small-group discussion	1.41 (21)	1.15 (21)	2.41 (17)
	Teaching in the inpatient service	1.29 (24)	1.01 (22)	2.21 (21)
Evaluating instruction	Teaching using simulation	2.47 (2)	2.51 (2)	3.93 (1)
	Teaching in a large classroom (online or face-to-face)	1.40 (22)	1.62 (16)	1.53 (25)
	Assessing educational needs	1.70 (16)	1.54 (18)	2.74 (14)
	Identifying and assisting students who are experiencing difficulty	1.70 (17)	1.77 (13)	2.34 (19)
	Developing educational evaluation strategies for courses and clerkships	1.92 (10)	1.49 (19)	3.61 (4)
General items	Tying educational objectives to course evaluations	1.77 (15)	1.29 (20)	3.40 (8)
	Evaluation of learners in clinical teaching	1.62 (18)	1.69 (15)	2.10 (22)
	Teaching learners from different generations	0.96 (25)	0.62 (26)	1.78 (24)
	Developing a curriculum implementation plan	2.01 (9)	2.09 (7)	2.83 (13)
	Learning new technologies	2.26 (3)	2.28 (3)	3.43 (7)

syllabus (score=3.90), and preparing materials for the class (score=3.72). However, preparing materials for the class ranked tenth for lecturers (Table 3, Appendix 2).

In general, assistant teachers reported higher needs assessment scores for all FD items, except teaching in a large classroom, compared to lecturers. Several items showed a significant gap in ranks between the two groups. Developing and using PowerPoint/multimedia presentations ranked fifth for lecturers, but 18th for assistant teachers. Teaching using various smart technologies and computers, ranked sixth for lecturers, but at 20th for assistant teachers. Developing educational evaluation strategies for courses and clerkships had ranked fourth for assistant teachers, but at 19th for lecturers. Tying educational objectives to course evaluations ranked eighth for assistant teachers, but at 20th for lecturers. Assistant teachers' needs score were higher than those of lecturers, except teaching in a large classroom (Table 3, Appendix 2).

## Discussion

This study investigated needs assessment for the roles and competencies of dental teachers, and FD items for the Faculty of Dentistry, at the UHS of Lao PDR. Assistant teachers expressed higher scores on needs assessments than lecturers, regarding most items. Lecturers and assistant teachers showed different needs and priorities, because of their varied roles, and years of experience working as educators. Similar to the previous studies, various ranks of faculty members expressed varied interests and needs, regarding FD activities [6].

The role of a resource developer was the most needed for FD. This role is consistent with the respondents' interests in developing a syllabus, preparing materials for the class, and using computerized presentations or smart technologies, as FD items. Although all lecturers' needs

ranks were higher for the role of resource developer, assistant teachers' ranks were low. Therefore, the FD for these roles should focus more on lecturers.

The role of administrator was excluded from the original study, but administration was considered an important, and underdeveloped competency, in the interview for validating the survey [7]. Currently, there is no formal coordinating body, to facilitate communication between different departments in the faculty. Kim et al. [9] also mentioned the "lack of consensus among faculty members in workplace" and "dependency on personal commitment," as problems regarding the educational environment in some Southeast Asian countries. As administration might not be directly related to teaching, no training program is considered necessary for this. Faculty should consider having a specific coordinating body, to support systematic administration, to improve the dental education system in Laos.

Role models and mentors were more needed by assistant teachers, as they have more direct interaction with the students, particularly in clinical and technical teaching. However, they had no training in being role models, or professionalism, and lacked experience as teachers. Assistant teachers need role model or mentoring training, before meeting with students.

Lecturers expressed more need for using PowerPoint/multimedia presentations or smart technologies and computers. Since lecturers are older, they are not good at managing computer skills, like the assistant teachers in the faculty. Lecturers maintain and periodically update their teaching materials, but some of these are not computerized. Lecturers want to increase the effectiveness of teaching skills, for better learning experiences for students. Therefore, training in computer skills and smartphone app usage is necessary for lecturers.

Assistant teachers showed more need for evaluating instructions and preparing materials for the class. Al-



though they don't have a principal role in educational evaluations and classroom lectures, they are assigned by each head of the department to support lecturers. They are mostly involved in clinical education, but were sometimes asked by lecturers, to participate in lectures. They should be encouraged to teach in consideration of the evaluation, and when entrusted with lectures, they should be encouraged to prepare their own lecture materials.

Although the ranks of the two groups are somewhat different, the needs score of assistant teachers are higher for most items. This means that the gap between perceived importance and perceived ability is large. It was similar to the previous study, in which assistant professors had higher needs than professors, for several items [6].

This study has a few limitations. First, the questionnaire was developed from previous research. To obtain and reinforce validity, interviews were conducted before the survey, but they may not fully reflect the Laotian context. Second, with several methods for needs assessment, the method of Borich [8] may not be sufficient, to fully analyze the differences in needs between the two groups. Nevertheless, this study is meaningful, because it is the first research that investigates the FD needs of Lao dental education.

The needs assessment identifies areas of interest that need to be prioritized, for the roles and competencies of teachers, and FD for educational activities in Lao dental education. Priority is given to lecturers for developing a syllabus, computer, and smart technology training, and to assistant teachers in a role model and mentoring, considering evaluation when teaching clinical skills, and preparation of class materials. Lecturers and assistant teachers will benefit differently, based on their roles and responsibilities. However, at an early stage of FD, the program should prioritize the most common needs of both groups. It should also be considered that assistant teachers'

education needs scores are generally higher. This study can inform future FD activities and programs, to improve and enhance dental education in Laos.

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## Appendix 1. Differences between Perceived Importance and Perceived Ability, in the Roles and Competencies of a Teacher

Category	Role and competencies of a teacher	Total (N=67)	Lecturers (N=43)	Assistant teachers (N=24)
Information provider	Lecturer in a classroom setting	0.66±0.98	0.51±0.80	0.92±1.19
	Teachers in a clinical or practical class setting	0.54±0.72	0.44±0.70	0.68±0.75
Role model	On-the-job role models (e.g., in clinics, ward rounds, and so forth)	0.48±0.82	0.37±0.79	0.68±0.85
	A role model in the teaching setting	0.51±0.88	0.33±0.84	0.80±0.87
Facilitator	Mentor, personal adviser, or tutor to a student or group of students	0.45±0.74	0.40±0.73	0.56±0.77
	Learning facilitator, e.g., supporting students' learning in small groups, in the laboratory, in the integrated practical class sessions, or in the clinical setting	0.54±0.66	0.49±0.63	0.64±0.70
Examiner	Planning or participating in formal examinations of students	0.42±0.74	0.42±0.73	0.40±0.76
	Curriculum evaluator, evaluation of the teaching program and the teachers	0.58±0.84	0.47±0.85	0.76±0.78
Planner	Curriculum planner, participating in the overall planning of the curriculum through curriculum planning committees	0.37±0.87	0.26±0.73	0.56±1.04
	Course organizer, responsible for planning and implementing a specific course within the curriculum. This may, for example, relate to one system or one theme, or to a special study module	0.48±0.89	0.30±0.74	0.76±1.05
Resource developer	Production of study guides to support the students' learning in the course	0.66±0.98	0.49±0.94	0.92±1.00
	Developing learning resource materials in the form of computer programs, videotape, or print, which can be used as adjuncts to lectures and other sessions	0.67±1.05	0.58±1.01	0.80±1.12
Administrator	Administrative jobs and communication between peers of departments to manage the educational system	0.58±1.00	0.42±0.98	0.80±1.04

Data are presented as mean±standard deviation.

Appendix 2. Differences between Perceived Importance and Perceived Ability in the Roles and Competencies of a Teacher

Category	Item	Total (N=67)	Lecturers (N=43)	Assistant teachers (N=24)
Preparing for a course	Developing instructional goals and objectives	0.58±0.70	0.44±0.70	0.76±0.72
	Selecting teaching strategies appropriate to goals	0.58±0.76	0.49±0.77	0.76±0.72
	Developing a syllabus	0.73±0.88	0.63±0.87	0.88±0.88
	Identifying learning styles and corresponding instructional examples and uses	0.58±0.80	0.44±0.77	0.84±0.80
	Instructional design	0.36±0.90	0.21±0.89	0.56±0.92
	Designing problem/case-based teaching activities or clinical vignettes	0.57±0.80	0.51±0.80	0.60±0.87
	Preparing materials for the class (handouts and other supplementary materials)	0.63±0.78	0.49±0.77	0.84±0.75
	Developing and using PowerPoint/multimedia presentations	0.54±0.82	0.51±0.83	0.60±0.82
	Constructing quality test questions and evaluating test results	0.40±0.68	0.23±0.65	0.68±0.63
	Delivering instruction	Lecture presentation skills	0.54±0.75	0.40±0.62
Teaching strategies beyond the lecture		0.61±0.87	0.56±0.83	0.68±0.95
Teaching using various "smart" technologies and computers (Google, YouTube, Quiz app, and so forth)		0.54±0.78	0.53±0.83	0.52±0.71
Conducting hybrid (mix of face-to-face and online) and online classes		0.27±0.83	0.26±0.88	0.28±0.74
Encouraging student participation in classes		0.43±0.78	0.42±0.76	0.44±0.82
Facilitating small-group discussion		0.40±0.78	0.30±0.80	0.56±0.71
Teaching in the inpatient service		0.36±0.62	0.26±0.54	0.56±0.71
Teaching using simulation		0.73±0.96	0.63±0.95	0.84±1.03
Teaching in a large classroom (online or face-to-face)		0.43±0.84	0.44±0.85	0.44±0.82
Evaluating instruction		Assessing educational needs	0.51±0.86	0.40±0.93
	Identifying and assisting students who are experiencing difficulty	0.52±0.77	0.47±0.80	0.60±0.71
	Developing educational evaluation strategies for courses and clerkships	0.55±0.84	0.37±0.82	0.88±0.78
	Tying educational objectives to course evaluations	0.51±0.77	0.33±0.75	0.88±0.73
	Evaluation of learners in clinical teaching	0.46±0.82	0.42±0.76	0.52±0.92
General items	Teaching learners from different generations	0.27±0.85	0.16±0.84	0.44±0.82
	Developing a curriculum implementation plan	0.58±0.82	0.51±0.80	0.64±0.91
	Learning new technologies	0.64±0.93	0.56±0.85	0.72±1.10

Data are presented as mean±standard deviation.