

Type of the Paper (Research Article)

## Assessing and Reporting Student Satisfaction with Prosthetic Dentistry Teaching and Curriculum in the Faculty of Dentistry, University of Benghazi

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### Abstract:

**Background:** The evaluation of student satisfaction is essential for the quality assurance and continuous improvement of dental education programs. Student feedback offers crucial insights for enhancing training curricula to ensure that future dentists are equipped with the necessary competence for safe clinical practice. This study was designed to assess student perceptions of preclinical fixed prosthodontics training to identify strengths and areas for improvement. **Aim:** The objective of this study was to assess the satisfaction levels of undergraduate dental students regarding their preclinical training and educational experience in fixed prosthodontics at the Faculty of Dentistry, University of Benghazi, Libya. **Methods:** A cross-sectional, questionnaire-based study was conducted with 146 senior undergraduate dental students. An online survey composed of 22 questions was distributed, covering seven areas: socio-demographic factors, learning objectives, course materials, content relevance, instructor knowledge, instructor delivery, and facilities. Data were analyzed using descriptive statistics, including mean scores and the coefficient of variation, to gauge overall opinion and the level of agreement. **Results:** Most of the 146 participants were female (76%) and second-year students (74.7%). The overall perception of the course was neutral to positive, with mean scores for all survey questions ranging from 2.7 to 3.7. Strengths included the instructor's knowledge, which 43.2% of students rated as "good," and the usefulness of course materials, rated as "useful" by 40.4%. The highest level of disagreement was noted for the instructor's engagement and enthusiasm (coefficient of variation = 18.9). A significant area of concern was the teaching facilities, with 37.7% of students giving a "neutral" response and 23.3% rating them as "unsuitable". **Conclusion:** The study highlights the instructor's knowledge as a significant strength

of the fixed prosthodontics course. However, it also identifies a critical need for improvement in the quality of teaching facilities and the learning environment to enhance the student experience. The findings were consistent with similar studies conducted in other countries and different dental specialties.

**Keywords:** *Student satisfaction, prosthetic dentistry, teaching and curriculum, Libya.*

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## 1. Introduction

Dental schools offer a diverse range of subjects in their undergraduate programs, beginning with foundational sciences and progressing to more specialized clinical topics. One of the key areas of focus is Prosthodontics, which is described as "the dental specialty that involves diagnosing, planning treatment, rehabilitating, and maintaining the oral function, comfort, appearance, and health of patients dealing with issues related to missing or inadequate teeth or oral and maxillofacial tissues, using biocompatible materials". This field encompasses four main disciplines: Complete Dentures (CD), Removable Partial Dentures (RPD), Fixed Prosthodontics (FP), and Dental Implants (DI) (1).

Dental professionalism is absolutely vital for anyone practicing dentistry today. It's not just about having the right skills; it's also about embodying the right personal qualities. That's why dental education programs need to incorporate both formative assessments, which help students grow professionally, and summative assessments, which determine if they've met the necessary standards. There's a wealth of evidence and agreement among experts that assessment is key to the success of any educational program. Research indicates that various assessment methods can greatly influence how students grasp and engage with their learning. For dental students, it's essential to gain the knowledge, skills, and attitudes that will make them competent and independent practitioners by the time they graduate (2).

To maintain high standards and encourage ongoing improvement, every training program must undergo regular evaluations. In other words, consistent evaluation is crucial for quality assurance and further enhancement of the program. Higher education institutions are increasingly paying attention to how students respond to their learning experiences. This initial evaluation should be a fundamental part of every training program, as it helps pinpoint areas that need improvement and sets the stage for more in-depth evaluations. Students' feedback offers valuable insights into whether effective learning is taking place.

Generally, their satisfaction and attitudes toward the training program serve as key indicators of their overall reactions. The undergraduate dental curriculum is designed to prepare graduates for real-world practice. Its main objective is to align with students' career aspirations and help shape their professional identities. Additionally, the program aims to equip students with the skills they need for job applications (3).

One of the key ways to evaluate an educational system is by gathering feedback from students, who truly feel the impact of the teaching throughout their courses. Since students are the primary beneficiaries of the educational system, assessing their satisfaction is crucial for understanding the quality of education. Research indicates that many dental school programs currently fall short of helping students achieve their set educational objectives. Therefore, it's essential to continuously assess the current state of education, pinpointing both its strengths and weaknesses to ensure effective clinical training (4,5).

The significance of this study lies in monitoring how students react to their learning experiences. This feedback can help enhance and further develop training programs. Additionally, by evaluating student training, we can lay the groundwork for more advanced assessments, as these reactions indicate whether effective learning is taking place. Thus, it is crucial to provide future dentists with high-quality instruction in order to ensure patient safety. Furthermore, dentistry school exams must be designed to evaluate undergraduates in relation to all necessary learning objectives. They ought to be created to assess the degree of knowledge, behavior, or skill acquisition of students. Students' primary focus and motivation to participate in the learning process is typically assessments. In order for dental graduates to become certified to practice independently, it is advised that "assessment processes should be rigorous, appropriate, and reliable" (6). The aim of the current study is to assess the professional preclinical training and the levels of student satisfaction with their educational experience for fixed prosthodontics among undergraduate dental students in Faculty of Dentistry, University of Benghazi, Libya.

## **2. Material and method:**

### **Ethics statement**

The Institutional Ethical Committee approval was held from the Scientific Research Ethics Committee (SREC) of the Faculty of Dentistry, University of Benghazi (Approval No.#0222). Participants were informed about the study objectives and provided their informed consent.

## Study design and setting

A cross-sectional questionnaire-based study was carried out among senior undergraduate 2nd-year dental students who have begun laboratory training on plastic teeth as part of the fixed prosthodontic curriculum in Faculty of Dentistry, University of Benghazi, Libya.

## Questionnaire details

A survey was made using Google Forms and sent to the senior undergraduate dental students Faculty of Dentistry, University of Benghazi, Libya through email and social media platforms like WhatsApp. The online survey form had required questions to make sure no incomplete answers were allowed. The responses were collected, and the data was automatically added to an Excel sheet by Google Forms. An online survey is created and sent to 146 male and female students to fill out. Data was collected using a survey consisting of 22 questions that cover seven areas: socio-demographic factors, learning objectives, course materials, content relevance, instructor knowledge, instructor delivery, and the facility and environment. Questionnaire distributed by electronic link written in English was distributed to all the participants and the response received by E-mail. The inclusion criteria of research subjects were: dental school, fixed prosthodontics department, undergraduate students. While, the exclusion criteria of research subjects were; final year students, Internship, postgraduate student, general practitioner and specialists.

## Statistical analysis

After the responses are collected, the data was analyzed using descriptive analysis using Statistical Package for Social Sciences (SPSS, IBM, Chicago, USA) 16.0 statistical software.

This study analyzed opinions from a survey. The responses were rated on a scale of 1 to 5, where 1 was given to the least negative as very unclear, not aligned, not effective at all, very inadequate,...etc. and 5 represented a positive one as very clear, fully aligned, very effective, very adequate....etc.

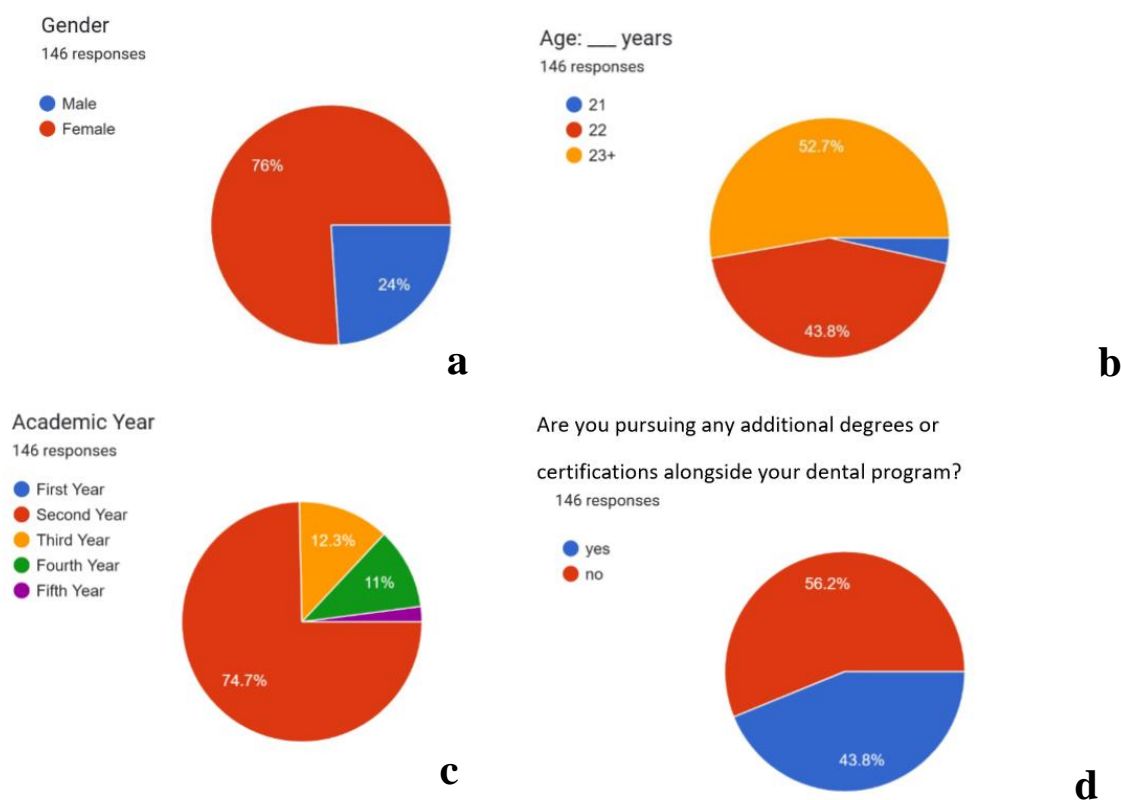
The study assessed the prevailing opinion for each questionnaire by comparing the calculated mean to a specific range-based scale. For instance, a mean between 1 and 1.79 indicated the least negative opinion (e.g., "very unclear"), while a mean of 4.2 to 5 signified the most positive ("very clear"). This method was applied to all comparable answers. Additionally, the coefficient of variation (standard deviation divided by the mean, multiplied by 100) was computed for each question's responses. This metric was used to rank the questions based on the level of agreement, with lower coefficients indicating more consensus and higher coefficients indicating more disagreement.

### 3. Results:

Table 1 and figure 1 represent the categorization of participants according to their gender, age, and academic years. Table 2 represents the percentage of the responses of the participants to the questions of the survey. Figures 2-18 are illustrating charts for the survey questions.

**Table 1: Socio-Demographic Information of Participants.**

Description	Response	Percentage
A) Gender	- Male	24 %
	- Female	76%
B) Age	- 21 Years	3.5%
	- 22 Years	43.8%
	- $\geq 23$ Years	52.7%
C) Academic Year	- First year	0%
	- Second year	74.7%
	- Third year	12.3%
	- Fourth year	11%
	- Fifth year	2%
D) Are you pursuing any additional degrees or certifications alongside your dental program?	- Yes	56.2%
	- No	43.8%


**Figure 1:** Charts of Participants' Categorization according to a) Gender b) Age c) Academic year d) additional degrees or certifications alongside your dental program.

Since all the mean values ranged between 2.7 and 3.7, this means that the majority of answers were either neutral or the positive grade after the neutral, Table 2.

According to the calculated coefficient of variation, the answers could be ranked from the most agreeable (least coefficient of variation) to the least agreeable (highest coefficient of variation). The answers to the question "Accessibility

of supplementary resources (e.g., online materials, videos)" were the most agreeable (the lowest coefficient of variation = 10.8), while the answers to the question "Instructor's engagement and enthusiasm during lectures" were the least agreeable (the highest coefficient of variation = 18.9).

**Table 2: Responses, Percentages of the Learning Objectives Questionnaire.**

Survey Question Number	Responses	Percentage	Mean	S.D.	Coefficient of Variation
Q1: The clarity of stated learning objectives	- Very Unclear - Unclear - Neutral - Clear - Very Clear	4.8% 11.6% 42.5% 32.9% 8.2%	3.3	0.5	16.3
Q2: The alignment of learning objectives with course content	- Not Aligned - Partially Aligned - Neutral - Aligned - Fully Aligned	5% 16.4% 39% 34.2% 5%	3.2	0.5	16.6
Q3: How effectively did the learning objectives help you understand the scope of the course?	- Not Effective at All - Slightly Effective - Neutral - Effective - Very Effective	6.9% 21.2% 27.4% 34.2% 10.3%	3.2	0.4	13.6

**Table 3: Responses, Percentages of the Course Materials Questionnaire.**

Survey Question Number	Responses	Percentage	Mean	S.D.	Coefficient of Variation
Q1: Adequacy and relevance of course materials (e.g., textbooks, handouts).	- Very Inadequate - Inadequate - Neutral - Adequate - Very Adequate	7.5% 15.1% 37% 32.9% 7.5%	3.2	0.5	15.3
Q2: Accessibility of supplementary resources (e.g., online materials, videos).	Very Inaccessible - Inaccessible - Neutral - Accessible - Very Accessible	8.9% 21.9% 30.1% 26% 13%	3.1	0.3	10.8
Q3: How useful were the provided course materials in aiding your understanding of the subject matter?	- Not Useful at All - Slightly Useful - Neutral - Useful - Very Useful	6.2% 13% 26.7% 40.4% 13.7%	3.4	0.5	15.7

**Table 4: Responses, Percentages of the Content Relevance Questionnaire.**

Survey Question Number	Responses	Percentage	Mean	S.D.	Coefficient of Variation
Q1: The relevance of course content to real-world practice	- Not Relevant - Partially Relevant - Neutral - Relevant - Highly Relevant	7.5% 19.2% 35.6% 32.9% 4.8%	3.1	0.5	15.8
Q2: How well did the course content prepare you for real-world applications in fixed prosthodontics?	- Not Well at All - Slightly Well - Neutral - Well - Very Well	10.3% 22.6% 27.4% 30.8% 8.9%	3.1	0.4	12.6
Q3: How engaging was the course content in maintaining your interest throughout the course?	- Not Engaging at All - Slightly Engaging - Neutral - Engaging - Very Engaging	11% 16.4% 28.1% 36.3% 8.2%	3.1	0.5	15.1

**Table 5: Responses, Percentages of the Instructor Questionnaire.**

Survey Question Number	Responses	Percentage	Mean	S.D.	Coefficient of Variation
Q1: Instructor's knowledge of the subject matter	- Very Poor - Poor - Neutral - Good - Very Good	3.3% 6.2% 28.1% 43.2% 19.2%	3.7	0.6	16.8
Q2: Instructor's ability to explain concepts effectively	- Very Ineffective - Ineffective - Neutral - Effective - Very Effective	6.8% 9.6% 35.6% 34.2% 13.7%	3.4	0.5	14.7
Q3: How approachable and supportive was the instructor in addressing your questions or concerns?	- Not Approachable or Supportive - Slightly Approachable or Supportive - Neutral - Approachable and Supportive - Very Approachable and Supportive	8.9% 19.9% 30.1% 30.8% 10.3%	3.1	0.4	12.7

**Table 6: Responses, Percentages of the Instructor Delivery and Style Questionnaire.**

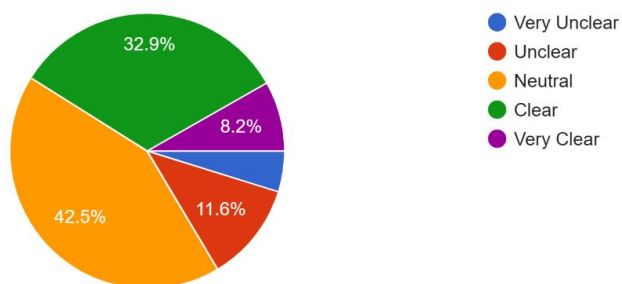
Survey Question Number	Responses	Percentage	Mean	S.D.	Coefficient of Variation
Q1: Instructor's engagement and enthusiasm during lectures	- Very Low - Low - Neutral - High - Very High	4.8% 17.1% 48.6% 22.6% 6.8%	2.8	0.5	18.9
Q2: Clarity and organization of the instructor's delivery	- Very Disorganized - Disorganized - Neutral - Organized - Very Organized	7.5% 8.9% 41.8% 35.6% 6.2%	3.7	0.7	18.3
Q3: How well did the instructor's teaching style facilitate your learning experience?	- Hindered Learning - Slightly Hindered Learning - Neutral - Facilitated Learning - Highly Facilitated Learning	8.9% 14.4% 35.6% 32.9% 8.2%	3.2	0.5	14.9

**Table 7: Responses, Percentages of the Facility and Environment Questionnaire.**

Survey Question Number	Responses	Percentage	Mean	S.D.	Coefficient of Variation
Q1: Suitability and adequacy of teaching facilities (e.g., classrooms, labs).	- Very Unsuitable - Unsuitable - Neutral - Suitable - Very Suitable	15.1% 23.3% 37.7% 21.2% 2.7%	2.7	0.4	14.3
Q2: Overall comfort and conducive learning environment	- Very Uncomfortable - Uncomfortable - Neutral - Comfortable - Very Comfortable	14.4% 23.3% 36.3% 25.3% 0.7%	2.7	0.4	15.8
Q3: How conducive was the learning environment to your overall learning experience?	- Highly Not Conducive - Not Conducive - Neutral - Conducive - Very Conducive	4.8% 15.1% 54.8% 15.1% 10.3%	3.1	0.5	17.5

The clarity of stated learning objectives.

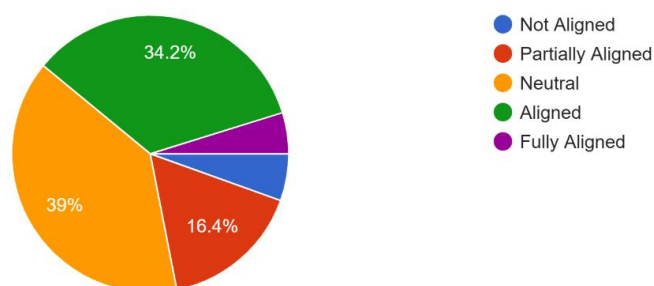
146 responses



**Figure 2:** Chart illustrating the clarity of stated learning objectives.

The alignment of learning objectives with course content

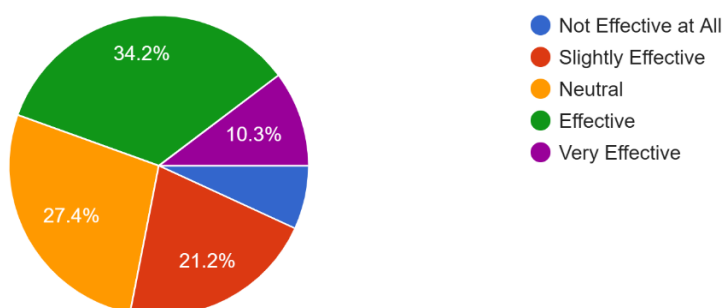
146 responses



**Figure 3:** Chart illustrating the alignment of learning objectives with course content.

How effectively did the learning objectives help you understand the scope of the course?

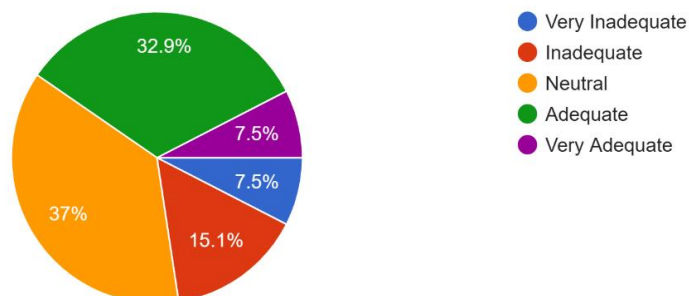
146 responses



**Figure 4:** Chart illustrating how effectively did the learning objectives help you understand the scope of the course.

Adequacy and relevance of course materials (e.g., textbooks, handouts).

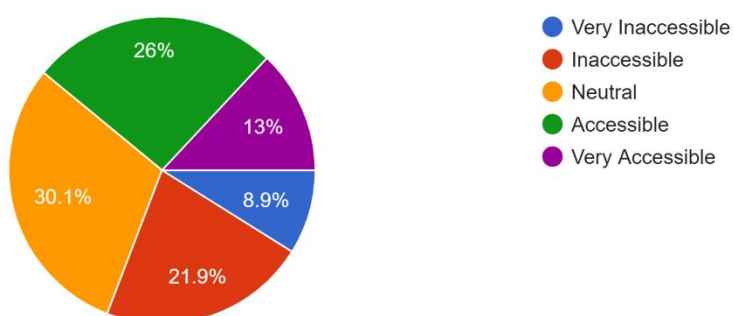
146 responses



**Figure 5:** Chart illustrating the adequacy and relevance of course materials (e.g., textbooks, handouts).

Accessibility of supplementary resources (e.g., online materials, videos).

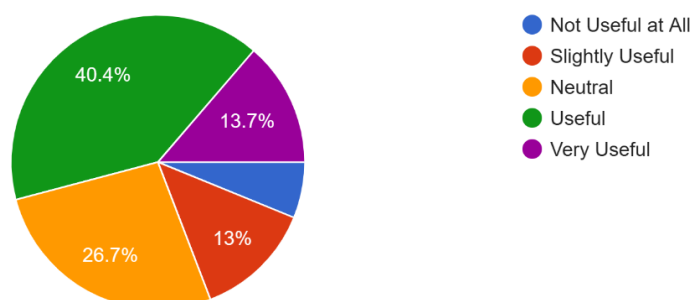
146 responses



**Figure 6:** Chart illustrating the accessibility of supplementary resources (e.g., online materials, videos).

How useful were the provided course materials in aiding your understanding of the subject matter?

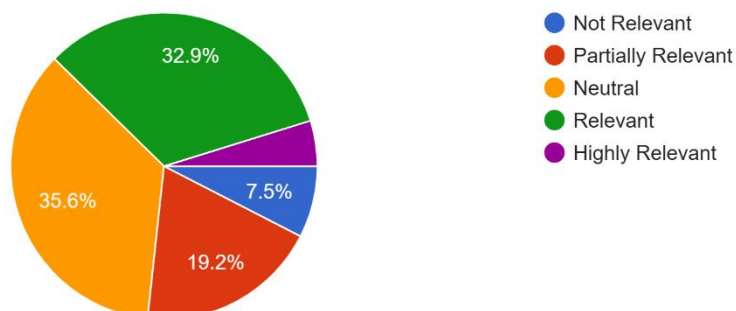
146 responses



**Figure 7:** Chart illustrating how useful were the provided course materials in aiding your understanding of the subject matter.

The relevance of course content to real-world practice.

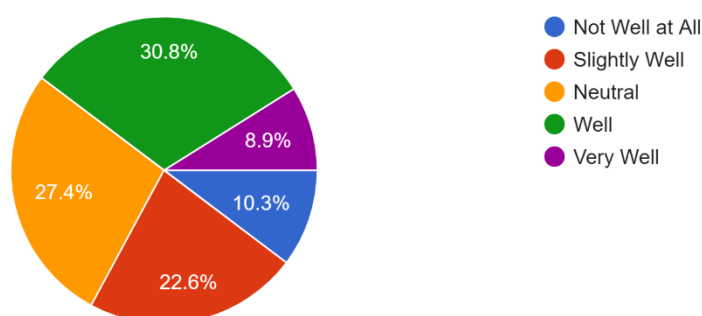
146 responses



**Figure 8:** Chart illustrating the relevance of course content to real-world practice.

How well did the course content prepare you for real-world applications in fixed prosthodontics?

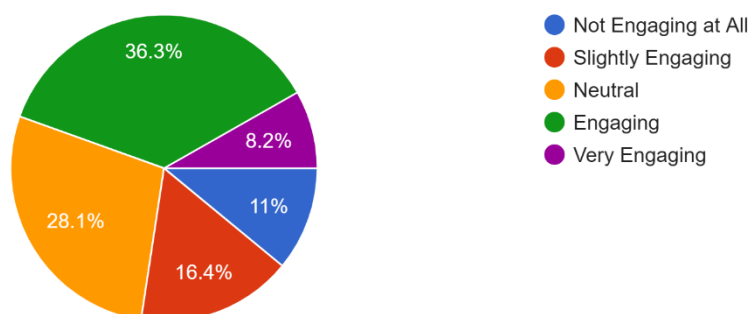
146 responses



**Figure 9:** Chart illustrating how well did the course content prepare you for real-world applications in fixed prosthodontics.

How engaging was the course content in maintaining your interest throughout the course?

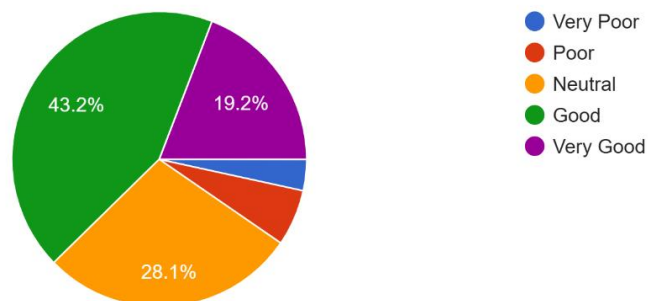
146 responses



**Figure 10:** Chart illustrating how engaging was the course content in maintaining your interest throughout the course.

.Instructor's knowledge of the subject matter.

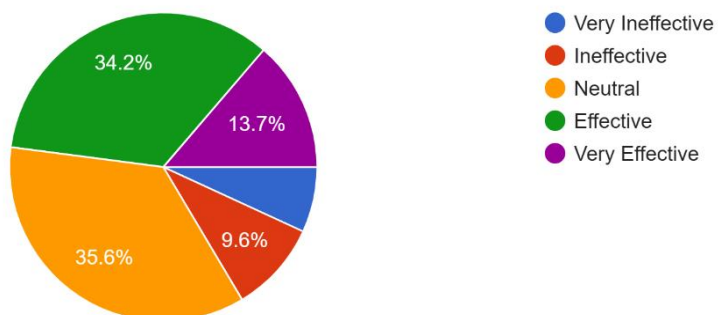
146 responses



**Figure 11:** Chart illustrating the instructor's knowledge of the subject matter.

Instructor's ability to explain concepts effectively

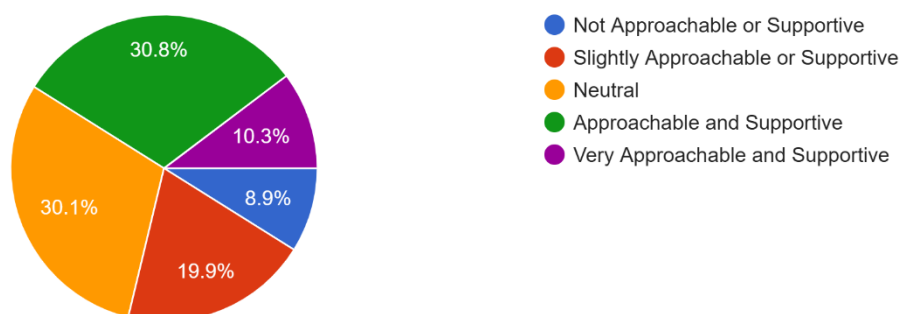
146 responses



**Figure 11:** Chart illustrating instructor's ability to explain concepts effectively.

How approachable and supportive was the instructor in addressing your questions or concerns?

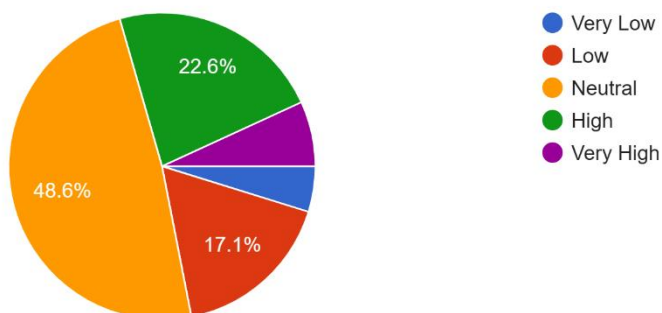
146 responses



**Figure 12:** Chart illustrating how approachable and supportive was the instructor in addressing your questions or concerns.

### Instructor's engagement and enthusiasm during lectures.

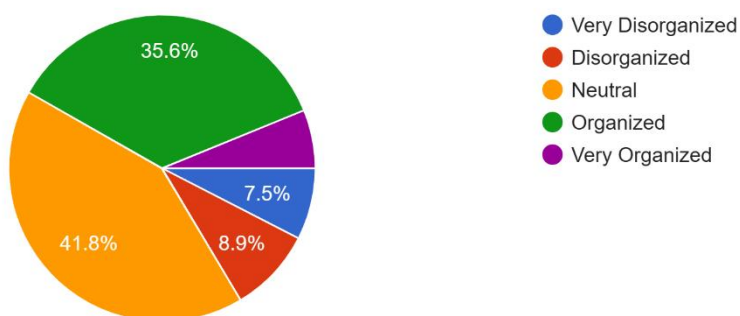
146 responses



**Figure 13:** Chart illustrating the instructor's engagement and enthusiasm during lectures.

### Clarity and organization of the instructor's delivery

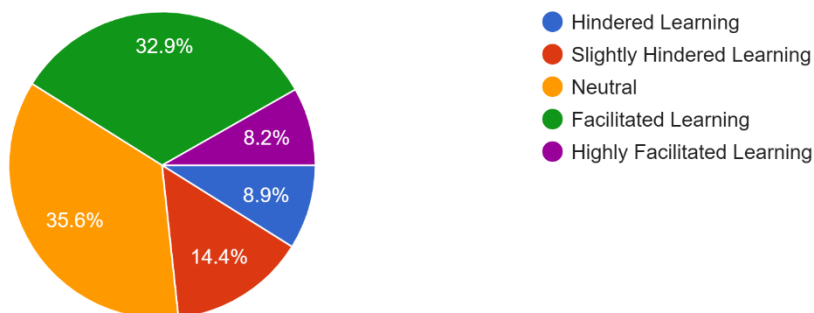
146 responses



**Figure 14:** Chart illustrating the clarity and organization of the instructor's delivery.

### How well did the instructor's teaching style facilitate your learning experience?

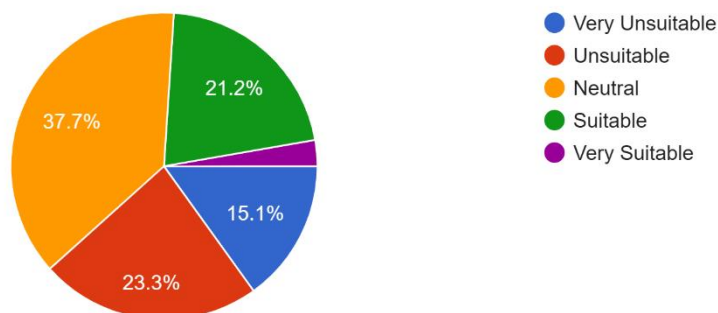
146 responses



**Figure 15:** Chart illustrating how well did the instructor's teaching style facilitate your learning experience.

### Suitability and adequacy of teaching facilities (e.g., classrooms, labs).

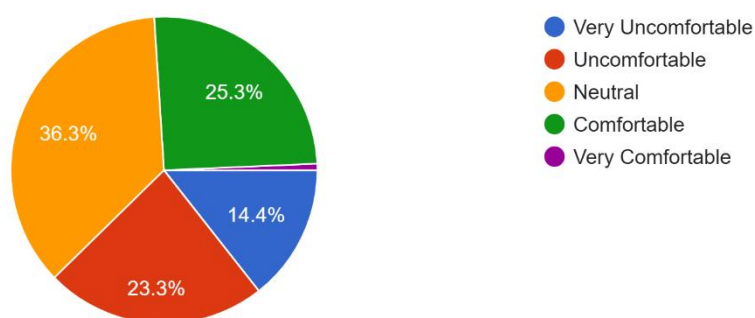
146 responses



**Figure 16:** Chart illustrating the suitability and adequacy of teaching facilities (e.g., classrooms, labs).

### Overall comfort and conducive learning environment.

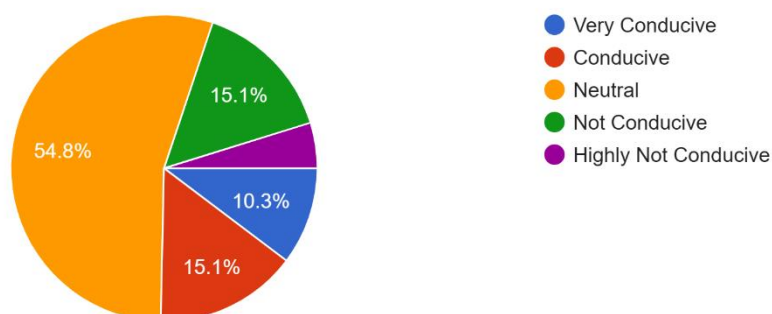
146 responses



**Figure 17:** Chart illustrating the overall comfort and conducive learning environment.

### How conducive was the learning environment to your overall learning experience

146 responses



**Figure 18:** Chart illustrating How conducive was the learning environment to your overall learning experience.

#### 4. Discussion:

This study rigorously evaluated undergraduate student satisfaction with preclinical fixed prosthodontics training at the University of Benghazi's Faculty of Dentistry. Recognizing student feedback as an invaluable tool for gauging educational efficacy, the research explored key factors influencing learner experiences. A pivotal element was the instructor's role; prior studies consistently show that an instructor's expertise, communication skills, and approachability are primary determinants of student satisfaction. This study's findings corroborate this, demonstrating a strong link between positive student experiences and effective, nurturing faculty interactions (7).

Furthermore, the learning environment and facilities were identified as crucial. A supportive, well-equipped setting significantly boosts student motivation, whereas challenges like inadequate laboratory resources, overcrowding, or outdated equipment can lower satisfaction. Addressing these infrastructural issues is essential for enhancing the program's effectiveness (8).

In conclusion, this research underscores the critical need for ongoing evaluation and progressive curriculum development. Key strategies for improvement include clarifying learning objectives, ensuring access to contemporary resources, and cultivating strong faculty-student relationships. Aligning the curriculum with real-world clinical practice is also vital for bolstering students' confidence and readiness for clinical training. The findings, derived from student survey data, offer valuable insights into the course's strengths and weaknesses in its design, content, and delivery, providing a roadmap for future enhancements (9,10).

The study's findings, based on a survey of 146 participants, offer insights into several aspects of the educational experience in a dental program. The demographic information reveals that a majority of the respondents were female (76%) and over 22 years old, with the largest group being 22 years old (43.8%). A significant portion of the participants (74.7%) were in their second academic year, and over half (56.2%) were pursuing additional degrees or certifications alongside their dental program.

The analysis of the survey questions, which included various themes such as learning objectives, course materials, content relevance, instructors, and facilities, indicates an overall positive to neutral perception among the students. The mean scores for all questions ranged from 2.7 to 3.7, suggesting that the majority of responses fell within the "neutral" or "positive" categories.

Students generally found the learning objectives to be clear and aligned with the course content, with 32.9% of respondents rating clarity as "clear" and 34.2% seeing alignment as "aligned". The effectiveness of objectives in helping students understand the course scope was also rated positively, with 34.2% finding them "effective". Similarly, students rated the usefulness and relevance of course materials highly, with 40.4% finding them "useful" and 32.9% rating them as "adequate".

Instructor effectiveness was rated favorably across several metrics. A large percentage of participants, 43.2%, rated the instructor's knowledge as "good," and 34.2% considered their ability to explain concepts "effective". The relevance of the course content to real-world practice was also seen positively, with 32.9% of students rating it as "relevant". However, the instructor's engagement and enthusiasm during lectures had a high coefficient of variation (18.9), indicating a wider range of opinions on this aspect. This question had the highest coefficient of variation among all survey questions, suggesting it was the least agreeable point for students. Conversely, the accessibility of supplementary resources was the most agreeable aspect, with the lowest coefficient of variation (10.8). This aligns with earlier studies about instructor effectiveness, as it generally provides a wide range of opinions reflecting the different attitudes of the students (11,12).

While the overall results are positive, some areas could be improved. The highest percentage of "Neutral" responses appeared for the question about the suitability of teaching facilities (37.7%), and a significant percentage of students found them "unsuitable" (23.3%). This suggests that the physical learning environment could be a potential concern for many students. Additionally, although the instructor's knowledge and ability to explain concepts were rated well, the varied responses regarding their enthusiasm and engagement during lectures suggest that teaching delivery styles could be a focus for future development to ensure a more consistent and positive experience for all students (13).

The results of our research align with similar studies in other countries and dental fields (14–19). Furthermore, the findings reveal a spectrum of satisfaction across crucial areas: learning objectives, course materials, content relevance, instructor performance, teaching methods, and the overall learning environment. This diversity of feedback not only highlights the strengths of the program but also indicates specific areas ripe for improvement within the curriculum. Aligning with previous research (20), our study confirms that student satisfaction is closely linked to clear learning objectives, adequate resources, and a supportive teaching atmosphere. When these key factors are well established, students are more inclined to express higher levels of

engagement and preparedness for their clinical endeavors. Conversely, a lack of resources or ambiguous expectations can undermine learning outcomes and lead to dissatisfaction. Moreover, the relevance of course content to real-world clinical applications emerged as a crucial factor. Research by Manogue et al. (21) indicates that the degree to which preclinical training mirrors actual clinical practice significantly shapes students' confidence and competence as they transition to clinical years. Disparities between theoretical knowledge and practical application can cause students to perceive their training as less effective, despite strong teaching quality (22).

One limitation of this study is its heavy reliance on self-reported questionnaires, which may introduce biases in responses. Furthermore, as the findings are confined to a single institution, they may lack generalizability to other dental schools. Future research should consider incorporating qualitative methods, such as interviews or focus groups, to gain richer insights into students' perceptions. Expanding the evaluation to encompass clinical training years would also facilitate a more comprehensive understanding of the curriculum's effectiveness.

In conclusion, the survey results provide valuable insights into the strengths and weaknesses of the fixed prosthodontics course. The instructors' knowledge and effectiveness were rated positively, which is a major strength. However, the survey also reveals significant areas for improvement, particularly regarding the alignment of learning objectives, accessibility of supplementary materials, and most importantly, the quality and suitability of the teaching facilities and learning environment. Addressing these issues would likely lead to a more effective and satisfactory learning experience for dental students. Future studies could explore the specific reasons behind the negative feedback on facilities and compare the perceptions of students across different academic years to identify any evolving trends.

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