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# Examining the Learning Loss Among Dentistry Courses in One Private University in the Philippines: Towards in Learning Recovery Program

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### Introduction

#### Background of the Study

Since early February 2020, educational institutions around the world have been closed to prevent the spread of the coronavirus (COVID-19). The impending impact of these massive school closures raises two critical questions: Could these disrupted classes cause learners to lose knowledge gained before COVID-19? How can this “learning loss” be avoided? Before delving into these issues, it is critical to define the learning loss caused by the school closure. Any specific or general loss of knowledge and skills or reversals in academic progress, most commonly due to extended gaps or discontinuities in a student’s education,” according to the definition of learning loss. This is mostly caused by disrupted formal schooling including “summer learning loss”.

Learning loss occurs during the pandemic as a result of children studying at home due to school closures. School closures do not have to equalize learning loss for all students. *Summer breaks, students’ formal education, dropping out, and low-quality teaching* are all factors that contribute to learning loss. Reduced instructional time, as provided by teachers by the national curriculum, is likely to result in a learning loss. The magnitudes of learning losses are difficult to compare due to the disparate scales used in the studies. As dentistry students, their journey toward becoming skilled and knowledgeable oral healthcare providers is filled with numerous challenges. One such challenge that has become increasingly prevalent in recent times is the issue of learning loss.

Summer breaks are an extended period during which students, typically in primary and secondary education, take a break from their regular academic activities. It usually occurs during the summer months, allowing students to relax, recharge, and engage in other activities outside the classroom. Summer breaks vary in duration across different countries and educational institutions.

Rest, summer breaks provide students with an opportunity to rest and rejuvenate after a demanding academic year. It allows them to take a break from the daily routine of attending classes, completing assignments, and studying for exams. Exploration and Personal

Growth, Summer breaks offer a chance for students to explore their interests, pursue hobbies, or engage in extracurricular activities. They can participate in summer camps, workshops, internships, or travel, which can contribute to personal growth, social skills development, and exposure to new experiences. Reduced Stress, academic pressure can be overwhelming for students, and summer breaks can alleviate some of that stress. It provides them with time to unwind, reduce anxiety, and enhance overall mental well-being. Family Time, Summer breaks allow students to spend quality time with their families. They can strengthen family bonds, create lasting memories, and enjoy recreational activities together.

Learning Loss Extended breaks from formal education can lead to learning loss, particularly in subjects where continuous practice and reinforcement are necessary. Students may experience a regression in their academic skills and knowledge during the long vacation. Achievement Gap, Summer breaks can contribute to the achievement gap between students from different socio-economic backgrounds. Students from disadvantaged backgrounds may have limited access to educational resources, summer programs, or enrichment activities, widening the gap between them and their more privileged peers. Some students may struggle with the lack of structure and routine during summer breaks. It can be challenging for them to manage their time effectively or stay motivated without the external accountability provided by regular schooling.

Childcare and Economic Impact, for working parents, summer breaks can create logistical challenges in terms of arranging childcare or finding suitable activities for their children. Additionally, businesses that rely on the school calendar may experience fluctuations in demand during this period. Formal education refers to the structured and systematic process of acquiring knowledge, skills, and values through educational institutions, such as schools, colleges, and universities. Dropping out of formal education refers to the act of leaving school or college before completing the prescribed program of study.

Students from low-income families may face financial constraints, making it difficult for them to continue their education. They may

need to work to support their families or lack access to resources and support systems that could help them succeed academically. Students who feel disengaged or disconnected from the educational environment are more likely to drop out. Factors such as ineffective teaching methods, a lack of relevance in the curriculum, or a mismatch between students' interests and the program of study can contribute to disengagement. Academic Challenges, students who struggle academically and face repeated failures or difficulties may become discouraged and eventually drop out. Learning disabilities, inadequate support, or insufficient interventions can exacerbate these challenges. Personal circumstances, such as health issues, family responsibilities, or personal crises, can lead students to drop out of school or college. These factors may require their immediate attention and prevent them from continuing their formal education.

Dropping out of formal education can have several negative consequences, including: Limited Job Opportunities, without a high school diploma or a higher degree, individuals may face restricted employment options and lower earning potential. They may be limited to low-skilled jobs or experience higher rates of unemployment. Reduced Lifetime Earnings, individuals who drop out of formal education generally earn less throughout their lives compared to those who complete their education. This wage gap can have long-term financial implications.

Social and Economic Disadvantages, dropping out of school or college can contribute to social and economic disadvantages. It may lead to higher rates of poverty, reliance on government assistance, and limited access to healthcare and other essential services. Impact on Personal Development, education plays a crucial role in personal development, critical thinking, and broadening one's perspective. Dropping out can impede the acquisition of knowledge and skills necessary for personal growth and success in various aspects of life.

Low-quality teaching refers to instructional practices that are ineffective, inadequate, or fail to meet the educational needs of students. It can manifest in various ways, including Lack of Subject Knowledge, teachers who possess inadequate subject knowledge may struggle to deliver accurate and comprehensive instruction. This can result in students receiving incomplete or incorrect information. Ineffective Pedagogical Strategies, Teachers who rely on outdated or ineffective teaching methods may fail to engage students or facilitate meaningful learning experiences. Monotonous lectures, rote memorization, or a lack of hands-on activities can hinder student comprehension and motivation. Limited Differentiation, effective teaching requires recognizing and addressing the diverse learning needs and abilities of students. Teachers who do not differentiate instruction appropriately may leave some students behind or fail to challenge others, leading to disengagement and underachievement. Insufficient Feedback and Support, quality teaching involves providing timely and constructive feedback to students to support their learning and growth. Inadequate feedback or a lack of individualized attention can impede student progress and development.

Professional Development, teachers benefit from ongoing professional development opportunities to enhance their subject knowledge, instructional strategies, and classroom management

skills. Training programs and workshops can help teachers stay updated with the latest research and best practices in education. Teacher Evaluation and Support, implementing comprehensive teacher evaluation systems can identify areas for improvement and provide targeted support to educators. Feedback and mentoring programs can help teachers refine their instructional techniques and address weaknesses. Curriculum Improvement, developing and implementing rigorous and relevant curricula can contribute to higher-quality teaching. Curricula should be designed to meet the diverse needs of students, incorporate active learning strategies, and align with educational standards. Collaboration and Peer Learning, encouraging collaboration and peer learning among teachers can foster a culture of continuous improvement. Opportunities for teachers to share best practices, exchange ideas, and engage in professional dialogue can elevate the overall quality of teaching in educational institutions. It is important to recognize the value of high-quality teaching and the critical role it plays in students' educational outcomes and long-term success.

Learning loss refers to the loss of knowledge and skills that a student experiences when they are unable to access regular educational resources and opportunities. It is a common problem that affects many students across various academic disciplines, and dentistry students are no exception. The pandemic has brought about unprecedented changes in the way education is being delivered, and dentistry education has not been immune to these changes. With the closure of dental schools and the shift to remote learning, students have been forced to adapt to a new way of learning, which has created a gap in their educational experience. The lack of access to clinical experiences, limited patient encounters, and reduced opportunities for hands-on learning have made it difficult for dentistry students to acquire and maintain the necessary skills and knowledge to succeed in their chosen profession. As a result, many students have experienced a significant loss in their academic progress, which can have long-term implications for their careers.

To address this issue, dental schools must provide adequate support to their students.

This may include additional online learning resources, virtual patient encounters, and simulation exercises to help students gain the necessary knowledge and skills required for their profession. Furthermore, it is also essential that students take an active role in their learning and seek out additional opportunities to enhance their knowledge and skills. This can include attending virtual conferences, participating in online study groups, and seeking mentorship from experienced professionals.

In conclusion, learning loss is a significant challenge that dentistry students are facing in today's educational landscape. However, with the right support and a commitment to continuous learning, students can overcome this challenge and succeed in their chosen profession.

### **Research Questions**

To examine the learning loss and the corresponding result or endpoint will be due to validate a learning recovery program.

1. What is the extent of learning loss among Dentistry students?
  - Doctor of Dental Medicine
  - Dental Hygiene NCIV
  - Dental Technology NCIV
2. How does each factor contribute to the Learning Losses?
  - Teaching Methods
  - Education Opportunities
  - Time for learning
  - Less Feedback
  - Emotional factors
3. What learning recovery program can be proposed to mitigate learning loss?

### Theoretical/ Conceptual Framework



The ADDIE model is a widely used instructional design framework that stands for Analysis, Design, Development, Implementation, and Evaluation. It provides a systematic approach to developing effective training and educational programs. By following the ADDIE model, instructional designers ensure a systematic and structured approach to developing and implementing training programs. This model allows for careful analysis of learners' needs, thoughtful design of instructional materials, efficient development, effective implementation, and continuous evaluation to improve the overall effectiveness of the training.

The outcome of the study will be to develop a program to mitigate the learning losses of the Dentistry industry.

#### Analysis

The analysis phase involves identifying the learning needs and goals of the target audience. This includes conducting a thorough analysis of the learners' characteristics, their existing knowledge and skills, and the context in which the training will take place. By gathering this information, instructional designers can determine the specific objectives and outcomes of the program.

#### Design

In the design phase, instructional designers create a blueprint for the training program. They define the instructional strategies, learning activities, and assessment methods that will be used to achieve the learning objectives. This phase involves developing the overall structure of the program, selecting appropriate instructional materials, and creating a detailed plan for content delivery.

#### Development

During the development phase, the instructional materials are created based on the design specifications. This can include designing presentations, writing instructional content, developing interactive multimedia elements, and creating assessments. The development phase focuses on transforming the design plan into tangible learning materials.

#### Implementation

The implementation phase involves delivering the training program to the learners. This can be done through various methods such as classroom-based instruction, e-learning platforms, or a combination of both. The instructional materials developed in the previous phase are used to facilitate the learning process. Trainers or facilitators play a crucial role in delivering the content and supporting learners throughout the training.

#### Evaluation

The evaluation phase assesses the effectiveness of the training program. It involves collecting feedback from learners, analyzing their performance, and assessing whether the learning objectives have been met. Evaluation can be conducted through formative assessments during the training process and summative assessments at the end of the program. The feedback received helps identify areas of improvement and informs future revisions of the training program.

#### Scope and Delimitations

The study aims to Examine Learning Loss among Dentistry students in one Private University in the Philippines: Toward a learning recovery program". The information acquired was solely used to develop a program for the advancement of research in 3 theoretical and 3 practical and this initial list could be a starting point for examining dental courses including general courses. The study will be conducted for dental students from 3rd to 4th dentistry students who are enrolled in the 2022–2023 academic year and have a laboratory program as part of their curriculum. Participants will have at least one (1) week to complete the survey questionnaire.

This is intended to ensure that the study is thoroughly monitored inside a single institution at National University MOA Campus and that the results are managed there carefully. This will be considered a mixed method of qualitative and quantitative study for the research; thus, no other schools private or public will be included in the study.

#### Significance of the Study

The following people will gain benefit from this research:

- **Dentistry Students:** They will assist the students, particularly those who are beginning senior high school, by giving them some advice on how to improve further for a better learning outcome once they pursue their Dentistry career.
- **Dentistry Teachers:** They will benefit from this study as they can manage and enhance the pedagogical approaches of their learning modality in educational institutions and may be able to enhance the student learning results by utilizing the findings of the study in the focused subject area.
- **Program Chair:** The program chair is responsible for managing the program committee, which is composed of researchers and experts in the conference's field of interest. They will benefit the study as they can enhance the curriculum programs for our dentistry students and provide the appropriate subject program for our dentistry students.
- **Curriculum Makers:** Curriculum makers develop or select

instructional materials, such as textbooks, workbooks, lesson plans, multimedia resources, and assessments, to support the teaching and learning process. They design these materials to engage learners, facilitate understanding, and promote achievement of learning goals.

### Definition of Terms

To have a better grasp of what the study tackles, the following terms are presented and defined:

- **Analyze:** The instructional problem is clarified, instructional goals and objectives are established, and the learning environment and learner's existing knowledge and skills are identified during the analysis phase.
- **Design:** The design phase should be methodical and precise. A logical, orderly method of identifying, developing, and evaluating a set of planned strategies aimed at achieving the project's goals is referred to as systematic. Learning objectives, assessment instruments, exercises, content, subject matter analysis, lesson planning, and media selection are all addressed during the design phase.
- **Develop:** The developers create and assemble the content assets created in the design phase during the development phase. Programmers create and/or integrate technologies. Debugging procedures are carried out by testers. The project is reviewed and revised in response to any feedback received.
- **Implement:** A training procedure for facilitators and learners is developed. The course curriculum, learning outcomes, method of delivery, and testing procedures should all be covered in the facilitators' training. Learner preparation includes training on new tools (software or hardware) and student registration.
- **Evaluate:** The assessment phase is divided into two parts: formative and summative. Each stage of the ADDIE process includes formative evaluation. Summative evaluation consists of tests designed for domain-specific criterion-related referenced items, as well as opportunities for user feedback.
- **Learning Loss:** The key to addressing learning loss is to recognize its impact and take action to address it head-on. By working together, teachers, parents, and students can create a brighter future for the next generation, one where learning loss is a thing of the past and every student can achieve their full potential.
- **Learning Performance:** The learning-performance distinction is a behaviorist notion that emphasizes the separation between learning behavior and performing it. Learning is a change in the capacity and potential to carry out a learned behavior, not merely the performance of the behavior. is a component of a service-learning project that addresses goal identification.

### Review of Related Literature

In recent years, there have been notable changes in teaching methods and the opportunities available for learning. However, some concerns have also arisen, such as less time for learning, reduced control and feedback, and the impact of emotional factors on the learning process. Let's explore each of these aspects further:

The factors influencing learning losses in different settings may differ. However, the factors influencing Learning losses caused by the pandemic can be represented as "changes in teaching methods," "opportunities to learn," "Less time for learning," "Less control/feedback," and "Emotional factors" are all factors that affect education.

**Changes in Teaching Methods:** With advancements in technology and educational research, teaching methods have evolved significantly. Traditional chalkboard-based instruction is gradually being replaced by more interactive and engaging approaches. These include multimedia presentations, online platforms, virtual reality simulations, and gamified learning experiences. These new methods aim to enhance student engagement, critical thinking, and problem-solving skills. In recent years, there have been notable changes in teaching methods that have transformed the way education is delivered. These changes are driven by advancements in technology, evolving pedagogical theories, and the recognition of the need for more student-centered approaches. The integration of technology in the classroom has significantly impacted teaching methods. Digital tools such as interactive whiteboards, educational apps, online resources, and learning management systems have expanded the possibilities for delivering engaging and personalized instruction. Teachers now have access to a vast array of multimedia resources and can leverage technology to enhance collaboration, creativity, and critical thinking among students.

**Active Learning:** Traditional passive learning approaches, where students were primarily passive recipients of information, are gradually being replaced by active learning methodologies. Active learning emphasizes student engagement, participation, and problem-solving. It involves techniques such as group discussions, hands-on activities, case studies, project-based learning, and flipped classrooms. These methods encourage students to take ownership of their learning process, develop critical thinking skills, and apply knowledge to real-world scenarios. Personalized Learning, recognizing that students have unique learning styles, abilities, and interests, educators are increasingly adopting personalized learning approaches. Personalized learning leverages technology and data to tailor instruction to individual students' needs and pace. Adaptive learning software and online platforms provide customized content, adaptive assessments, and immediate feedback, enabling students to learn at their own pace and focus on areas where they require additional support. Collaborative Learning, collaboration has become an essential component of modern teaching methods. Educators are encouraging collaborative activities that foster teamwork, communication, and social skills. Group projects, cooperative learning, and peer-to-peer learning activities enable students to work together, exchange ideas, and learn from one another. Collaborative learning also reflects the collaborative nature of the professional world, preparing students for future careers. The flipped classroom model reverses the traditional approach of delivering lectures in class and assigning homework for practice. In a flipped classroom, students access pre-recorded lectures or learning materials outside of class, often through online platforms. Classroom time is then dedicated to interactive discussions, problem-solving, and hands-on activities facilitated by the teacher. This model allows students to engage with the content actively, seek clarification during class time and promotes a deeper understanding of the subject matter. Assessments have evolved from being solely focused on grading to becoming valuable tool for learning. Formative assessments, such as quizzes, projects, and class discussions, are used to provide ongoing feedback and monitor students' progress. This approach allows teachers to identify areas where students may need additional support and adjust instruction accordingly. Teaching methods have undergone significant changes in recent years. These changes embrace technology, active learning, personalization, collaboration, and assessment for learning. By adopting these methods, educators aim to create engaging and inclusive learning environments that promote critical thinking, problem-solving, and lifelong learning skills among students.

**Opportunities to Learn:** The digital age has brought numerous learning opportunities. Online courses, educational apps, and open educational resources (OER) have made learning accessible to a wider audience. Students can now access a wealth of information and educational materials at their fingertips, allowing them to explore subjects beyond the confines of the traditional classroom. This increased availability of resources has empowered self-directed learning and lifelong learning. Opportunities to learn are abundant in today's world, thanks to advancements in technology and the availability of various educational resources. Whether you're looking to expand your knowledge in a specific field, acquire new skills, or explore different subjects, there are several avenues you can explore to enhance your learning journey. Here are some key opportunities to learn that you can take advantage of Traditional Education, and formal education systems, such as schools, colleges, and universities, offer structured learning programs. These institutions provide comprehensive courses taught by qualified instructors, allowing you to earn degrees or certifications in various disciplines. The rise of e-learning platforms has made education accessible to a wider audience. Websites like Coursera, Udemy, and edX offer a vast range of online courses on diverse topics. These courses often provide flexibility in terms of timing and pace, enabling you to learn at your convenience. Massive Open Online Courses (MOOCs) are online courses that are open to anyone interested in learning. They are often offered by prestigious universities and institutions and cover a wide array of subjects. MOOCs typically include video lectures, quizzes, assignments, and discussion forums to facilitate learning and interaction among participants. Webinars and Virtual Workshop, any organization and experts conduct webinars and virtual workshops on specific subjects or industry-related topics. These online events allow participants to learn from experienced professionals, ask questions, and gain insights into specific areas of interest. Educational Apps, such as mobile applications focused on education have become increasingly popular. These apps provide interactive and engaging learning experiences through gamification, quizzes, and interactive lessons. They cover a wide range of subjects, including languages, science, mathematics, coding, and more.

Open Educational Resources (OERs, are freely accessible resources like textbooks, lectures, videos, and articles that can be used for self-study or incorporated into teaching materials. Professional Development Programs, many industries and organizations offer professional development programs to enhance the skills and knowledge of their employees. These programs may include workshops, seminars, conferences, or on-the-job training opportunities. Community Education, local community centers, libraries, and organizations often organize classes and workshops on a range of subjects. These programs provide opportunities for lifelong learning and community engagement. Mentorship and Apprenticeships, earned from experienced individuals in your field of interest can be highly valuable. Seeking mentorship or apprenticeships allows you to gain practical knowledge, insights, and guidance from seasoned professionals. Self-directed Learning, taking the initiative to explore and learn independently is a valuable approach. Utilize resources like books, online articles, documentaries, podcasts, and educational videos to pursue self-directed learning on topics that interest you.

Remember, learning is a lifelong process, and embracing these opportunities can help you continuously grow and develop your skills and knowledge in various domains. Choose the methods that align with your learning style, goals, and availability to make the most of the opportunities available to you.

**Less Time for Learning:** Despite the increased opportunities for learning, some argue that students today have less time for in-depth learning due to various factors. The fast-paced nature of modern life, extracurricular activities, and heavy academic workloads can lead to time constraints. Additionally, the pressure to cover a broad curriculum may result in a focus on surface-level understanding rather than deep comprehension. Balancing the quantity and quality of learning experiences remains a challenge for learning. Whether it's due to busy work schedules, personal commitments, or other responsibilities, the challenge of finding time for learning is a common concern. However, it's important to recognize the value of continuous learning and explore strategies to make the most of the time available.

Here are a few suggestions to maximize learning when you have less time to prioritize and set goals: Determine what you want to learn and why it's important to you. Set clear, achievable goals that align with your interests and aspirations. By identifying your priorities, you can focus your limited time on the most valuable learning activities. Develop a schedule and create a structured schedule that includes dedicated time for learning. Even if you can only spare a few minutes each day, consistency is key. Set aside specific blocks of time when you can concentrate on learning, whether it's early mornings, evenings, or weekends. Embrace microlearning, break down your learning material into smaller, digestible chunks. Microlearning involves short, focused learning sessions that can be completed in a few minutes. Take advantage of online resources, such as educational apps, podcasts, or YouTube videos, that offer concise and targeted information. Utilize commuting time, if you have a daily commute, make the most of that time by engaging in learning activities. Listen to audiobooks, podcasts, or educational lectures during your commute to make productive use of this otherwise idle time. Eliminate distractions, Minimize distractions during your learning sessions. Put away your phone, close unnecessary tabs on your computer, and create a quiet environment that promotes focus. By reducing interruptions, you can make the most of the time you have available.

**Make Learning a Habit:** Incorporate learning into your daily routine. Treat it as a regular part of your day, just like eating or exercising. Even if you can only dedicate a small amount of time, consistent effort will yield progress over time. Seek efficiency, Look for efficient learning techniques and resources. Find summaries, cheat sheets, or condensed versions of the material you want to learn. Optimize your study techniques by using methods like active recall, spaced repetition, and mind maps to retain information effectively in a shorter time. Leverage technology and take advantage of educational technology tools and platforms. Many online platforms offer flexible learning options, allowing you to access courses, tutorials, or interactive learning experiences at your own pace. Explore e-learning platforms, online communities, and virtual classrooms that suit your needs and time constraints. Learn with others, collaborate with like-minded individuals, or join study groups to share the learning journey. Engaging in discussions, debates, or group projects can enhance comprehension and provide additional motivation. Reflect and review, allocate time to reflect on what you've learned. Regularly review your progress and reinforce key concepts through summarization or teaching others. Reflecting on your learning experience can deepen understanding and retention. Less Control/Feedback, as technology integration becomes more prevalent, some concerns have been raised regarding reduced control and feedback in the learning process. In traditional classrooms, teachers can closely monitor students' progress, provide immediate feedback, and

adapt their teaching strategies accordingly. However, in online or self-paced learning environments, students may experience less direct supervision and personalized guidance. This highlights the importance of implementing effective assessment strategies and fostering self-regulated learning skills.

**Emotional Factors:** The emotional well-being of students plays a crucial role in their learning experience. Emotional factors such as motivation, stress, and anxiety can significantly impact learning outcomes. The transition to new teaching methods and increased reliance on technology can both positively and negatively affect students' emotional states. For instance, gamified learning experiences and interactive platforms can enhance motivation and engagement, while excessive screen time or online bullying may lead to emotional challenges. Educators need to address emotional factors and create supportive learning environments. The emotional factor refers to the influence of emotions on various aspects of human behavior, cognition, decision-making, and interpersonal relationships. Emotions play a vital role in our daily lives, affecting how we perceive and respond to the world around us. They can be powerful motivators and significantly impact our thoughts, actions, and overall well-being.

Emotions encompass a wide range of feelings, including happiness, sadness, anger, fear, surprise, disgust, and more. Each emotion carries its own unique physiological and psychological response, shaping our subjective experiences and shaping our interactions with others. Emotions can arise from internal factors such as personal experiences, beliefs, and values, as well as external factors like environmental stimuli and social interactions. The emotional factor influences several aspects of human life such as Decision-making; emotions can heavily influence the decisions we make. For example, fear may lead us to avoid risky situations, while desire and excitement can drive us toward pursuing certain goals or rewards. Our emotional state can bias our judgments and alter our perception of risks and benefits. Relationships and emotions are fundamental to interpersonal connections. They allow us to empathize, connect, and build relationships with others. Expressing and understanding emotions in social interactions contribute to effective communication, bonding, and the development of trust and intimacy. Memory and Learning, emotional experiences are often better remembered than neutral experiences. Emotions can enhance memory consolidation and retrieval, influencing what we remember and how vividly we recall it. Additionally, emotions can impact learning by influencing attention, motivation, and the overall learning experience. Health and Well-being, emotional well-being is closely linked to overall health. Positive emotions, such as happiness and contentment, are associated with better physical and mental health outcomes. Conversely, prolonged negative emotions, such as chronic stress or depression, can have detrimental effects on our well-being, leading to various health issues. Creativity and Problem-solving, emotions can stimulate creativity and problem-solving abilities. Positive emotions can enhance flexible thinking, encourage the exploration of new ideas, and improve problem-solving skills. On the other hand, negative emotions can also serve as catalysts for creative problem-solving, as they can motivate us to seek solutions and overcome obstacles. Self-awareness and self-regulation, emotional intelligence involves recognizing and understanding our own emotions and those of others. It encompasses the ability to regulate and manage our emotions effectively. Developing emotional intelligence allows individuals to navigate social situations, cope with stress, and make more informed decisions.

Understanding and harnessing the emotional factor can lead to greater self-awareness, improved relationships, and enhanced overall well-being. It is essential to recognize and acknowledge our emotions, as well as develop healthy ways of expressing and managing them to lead a more fulfilling and balanced life.

### **Teaching Methods**

To avoid learning losses due to school closures caused by COVID-19, it is recommended that every effort be made to use distance learning programs, as well as open learning applications and platforms deemed appropriate by schools and instructors. However, most instructors (66.9%) were required to teach online for the first time. It is extremely difficult to replace the learning interactions that occur in the classroom between teachers and students with technology. Of students' unfamiliarity with the distance education system, learning losses may have occurred, particularly in the younger age groups. However, providing access to education through technology has the potential to have a minor-to-moderately beneficial effect on learning during school closures. However, whether this effect can compensate for learning losses remains to be seen.

### **Education Opportunities**

According to research on online learning and teaching, they are only effective if students have consistent access to the internet and computers, and if teachers have received focused training and support for online learning.

provide instruction. During the COVID epidemic, the availability of remote learning opportunities for students varied greatly from one school to the next. It was difficult for instructors to obtain technology (computers, software, a reliable internet connection, and so on). Due to school closures, children who lack access to online learning materials or appropriate equipment may be unable to participate in a variety of learning-based activities. Schools help students from all socioeconomic backgrounds roughly equally. While performance among children from higher socioeconomic backgrounds continues to improve during times when school is not in session (such as summer vacations), no such improvement is observed among children from lower socioeconomic backgrounds. High-income families have access to alternative forms of instruction—books, computers, the Internet, radio, television, and smartphones—that many low-income families do not.

### **Time for Learning**

Most students get their formal education in schools. Children may spend less time learning if schools are closed and learning is relocated to a remote location. Reduced instructional time—as provided by instructors by the national curriculum against which students will ultimately be evaluated—is likely to result in significant learning losses. According to a study conducted in Italy and France by, students in both countries have diverted a significant portion of their time previously spent on education to passive screen usage during the lockdown period. Less time spent learning could lead to learning loss. According to the findings of a study of students' time spent on activities during the school day, time spent on learning is less than the total time spent in and out of school in the May 2020 period, compared to data from 2014-2015.

Students from higher-income families with more educated parents studied more during school closures, had better study equipment at home, and received more help. This proportion is roughly half of what a previous poll predicted, indicating that learning losses are prevalent and significantly larger than anticipated.

### **Less Feedback**

The quality and specificity of feedback on learning progress are critical at all stages of education. Feedback is frequently regarded as a source of information required for task improvement from a cognitive standpoint. During COVID-19, students have very little control/feedback. Even a small amount of extra time spent with parents, on the other hand, can have a positive effect on a child's development, particularly in young children.

Another issue is whether students' participation in activities at home during the distance education process is controlled. COVID-19 effectively eliminates instructor control over overactive learning time, rather than improving students' self-regulation, volitional, and motivational abilities, as well as parental control over learning time. Three-quarters of children reported that their parents do not always exert control over them.

The reasons given by parents who did not support their children's remote learning were a lack of knowledge, being too busy, having someone else do it, or the expense. Although parents' responses are not mutually exclusive, because they lacked the necessary skills, % said they were not supporting their children's distant learning. 35% said they were too busy to help their children with distance learning. During the lengthy school closure, many working parents struggled to educate, control, and care for their children.

### **Emotional Factors**

Emotion has a significant influence on human cognitive functions such as perception, attention, learning, memory, reasoning, and problem-solving. Emotions have a disproportionately strong influence on changing the selectivity of attention and driving action and behavior. Severe anxiety may result in memory loss.

Educators, parents, and students have all personally witnessed the significant cost of this extended period of distance learning, which includes increased rates of depression and anxiety, as well as a decrease in student performance and the outcomes of learning.

### **Academic Achievement**

The teacher also on the other hand has a role of partaking in laboratory activities to ensure the transfer of information and truths to students. This bid helps to sustain and stimulate the curiosities of students in studies containing laboratory work for higher academic output. Nevertheless, mounting evidence indicates that teachers do not exhibit behaviors consistent with achieving the stated objectives. Some of these factors include how practical subjects are taught, how many or how poorly equipped laboratories there are, how many students there are, if there is adequate infrastructure for teaching and studying practical subjects, and how many and how good the professors are Mulela. In line with the previous sentence, students who were taught exclusively through laboratory methods received higher attitude scores but lower performance scores than students who were only given instruction using the native lecture technique J.F. Groen and B. Quigley Y. Herry and argued that the lack of practical instruction in all science and math programs renders them insufficient. Students must complete the practical assignment either in the science lab or the classroom.

It was important to underline that truancy harms not only the individual and his or her vision but also other pupils by slowing down teaching and degrading the school's general performance, according to Keppens, G. & B. Spruyt. On the other hand, absenteeism among teachers also affects pupils' academic performance. Since we learn by doing, it is crucial to engage in practical activities, especially during the school years, so that scientific facts and their

applications can be given in a way that makes sense. A tangible object leaves a stronger mental impression than one that is merely seen from a distance or during a presentation, it is a fact Isozaki, T. A.E. Owiti also discovered a general lack of resources in a few recently constructed secondary schools in Lagos when it examined the resources available for teaching and learning biology. He also found that, among other things, the majority (80%) of schools that claimed the availability of laboratories did have one. Second, it was discovered that 40% of the schools lacked laboratories, while the remaining 60% had a space designated as a lab but lacked adequate equipment. She then implied that because teaching biology practicals is difficult, pupils' ability to learn will be constrained.

This is supported by a study by Onyele, C.V, which found that absent teachers have a greater negative impact on pupils' academic progress. Also, when children miss more days of class, their performance on standardized examinations falls, making the situation worse. Yet, according to Gottfried, M.A, many instructors who regularly miss work do so because they are ill or because they have requested a leave of absence from the administration. As students are made to partake in significant exercises and testing in the laboratory, their passions are aroused Watters, J.

### **Students' Academic Performance**

Even though there are fewer of these instructors working in public schools, many still have to work extra part-time jobs or start their businesses to make ends meet, according to Nilson, L.B. Teachers also play a crucial role in ensuring that education fulfills its intended goals by interpreting, exhibiting, and defining standards for educational activities during school hours Brown, J.C. Teachers thereby control the process of teaching and learning. S.D. Brookfield Hence, proposed that a teacher is described as productive when he or she achieves the desired result while carrying out his or her duties as a teacher.

### **Dentistry in the 20th Century**

All the health professions, including dentistry, medicine, nursing, pharmacy, and allied health sciences, are driven by scientific inquiry and discovery. This includes education, research, technology, and healthcare. Following the development of findings from fundamental to clinical research, improved health outcomes and processes move from clinical to implementation. Implementation science is generally defined as the scientific study of strategies that encourage the systematic incorporation of research findings (such as basic, translational, behavioral, socioeconomic, and clinical) and other related evidence-based practices into standards of care, thereby improving the quality, efficacy, and cost-benefits of healthcare services.

In this day of scientific and technological advancement, there are several opportunities to create novel diagnostics, preventative measures, treatments, and cures for oral health. Dental schools are the biggest national resource tasked with teaching, training, and keeping oral health researchers who may benefit from new technologies and opportunities for research that will help both patients and the field as a whole. This article reiterates the notion that research training and scholarship must be deeply ingrained into the culture and ethos of dentistry institutions to protect the future standing of the profession. His assessment highlights the necessity for reengineering training programs to increase the capability of a skilled cadre of oral health researchers. Such approaches will most effectively equip incoming graduates for emerging opportunities in translational research, clinical trials, and team science, Dr. John S. Colombo PhD and Dr. Rena N. D'souza DDS, MS, PhD, September 2017

Slavkin H.C.2017, notes that other research has shown the beneficial effects on academic achievement and career growth that come from fostering a scientific attitude. According to Kadali NS, Alla RK, Guduri V, and Mc SS, 2019, dental adhesives have advanced over time from three-step systems to two-step systems, and finally to one-step systems. A simpler self-etch system has replaced the more time-consuming and technique- sensitive entire etch system in the technique or adhesive approach. Although digital approaches can be seen as a paradigm change in dentistry undergraduate instruction, Stoilov, M. et al.2021. argues that even when classical and digital methods produce equivalent outcomes, the human tutor component must still be taken into consideration.

Several methods of exposing students to research have been adopted by numerous dental higher education institutions worldwide. Dentistry schools in China offer undergraduate research programs, however, participation is not intended to earn credits because the research projects are completed as supplementary tasks. The program's goal is to enhance critical thinking and inventive learning during dental professional training sessions. The study's authors, Yu W., Sun Y., Miao M., Li L., Zhang Y., and Zhang L., 2021, concluded that the involvement of qualified faculty, support from dentistry schools, and student motivation and autonomy were crucial for the success of undergraduate research programs.

### **Learning Losses**

Several studies have investigated the effects of learning loss, which is not surprising given that nearly all teachers and parents are aware that it occurs. However, the literature is disjointed and difficult to find. According to Cooper et al., the first known study of summer learning loss was a 1906 study on student math computation speed, whereas Custers claims that knowledge retention was first studied in laboratories beginning in the 1880s. Regardless of when the first studies were conducted, over the last century, there has been a steady trickle of articles published on this subject. Cooper et al. conducted a review and meta-analysis of learning loss effects in the K-12 arena, focusing primarily on math and reading. They discussed 39 articles and chose 13 for meta-analysis. Overall, they discovered that students ranged from making no progress over one summer to losing one month's worth of skills relative to their current grade level, and they cautioned that their findings could be overly optimistic. Cooper et al. (1996) went on to say that while gender, ethnicity, and IQ did not appear to have a consistent effect on learning losses, socioeconomic status (SES) did, with lower SES students showing losses and larger declines than higher SES students. Math scores did not appear to be affected by socioeconomic status, with all students losing the same amount of math skills over the summer. They argue that because other skills, such as math problem solving and reading comprehension, are more conceptually based, they are less likely to be lost during the summer. They emphasize that these findings are consistent with cognitive psychology literature, which suggests that facts and procedural skills are the most vulnerable to loss. They then go on to discuss how "From these principles we can generate some predictions about how other subject areas, not tested in recent investigations, might be affected by summer break. For example, we could hypothesize that during the summer, students will forget science facts but retain knowledge of scientific concepts".

Custers conducted a review of the literature on medical education that focused on basic science knowledge. According to this review of literature, approximately two-thirds to three-fourths of knowledge will be retained after one year, decreasing to slightly less than half after two years. The author discusses the usefulness of "Ebbinghaus's curve of forgetting", which describes

how students have large losses at short retention intervals (i.e., immediately after instruction ends), followed by leveling off and smaller losses at longer retention intervals (i.e., many years after instruction), and how the shape of this curve appears to be the same for meaningless [retention of nonsense syllables] and meaningful [retention of ideas or concepts] knowledge. According to Custers (2010), most studies appear to be supportive of, or at least aligned with, Ebbinghaus's curve, but the timescales of the curves can be quite different.

The synthesis of the literature on learning loss across these domains reveals that students forget conceptually based knowledge and mechanisms more slowly than memorized facts or rote knowledge. Because domains tend to assess multiple overlapping things, learning losses/gains should be broken down into individual items or concepts, and some items/concepts may show losses while others may show gains. The role of instruction in learning is also important because reformed courses and interactive participation in classes tend to increase the amount of student knowledge. The amount of time since students used/reviewed the content about assessment administration is also important to consider, in keeping with the "use it or lose it" adage.

### **Methodology**

This chapter presents the methodology used in this study to address the research objectives and answer the research questions. It outlines the research approach, design, data collection methods, and analytical techniques employed. The chapter also discusses the measures taken to ensure validity, reliability, and ethical considerations.

By providing a clear and systematic account of the research process, this chapter ensures the credibility and robustness of the study's findings. It serves as a roadmap, guiding the researcher in making informed decisions and generating meaningful insights.

### **Research Design**

The research design for this study is a convergent parallel mixed-method observational study and was carried out on a population of undergraduate dental majors from 3rd to 4th-year students enrolled in National University – MOA Campus in the academic year 2022–2023. To gain an in-depth understanding of the topic and investigate the learning losses of Dentistry students, a convergent parallel design has been employed. This design involves conducting quantitative and qualitative elements concurrently in the same phase of the research process.

The study utilizes a diagnostic test to assess the field of learning losses of Dentistry students in their general courses, serving as the quantitative component of the research. Additionally, thematic analysis is employed as the qualitative component to explore factors contributing to learning losses. By combining both quantitative and qualitative data, a comprehensive and holistic understanding of the topic can be achieved.

To ensure corroboration and validation, the researcher aims to triangulate the methods by directly comparing the quantitative statistical results with the qualitative findings. This process involves obtaining two separate datasets, analyzing them independently, and subsequently comparing the results.

The convergent parallel design allows for a balanced integration of the quantitative and qualitative components, emphasizing their equal importance in addressing the research objectives. This approach enhances the validity and reliability of the study's

conclusions and provides a deeper understanding of the learning losses experienced by Dentistry students. This research approach enables the integration of data from various sources, providing a comprehensive perspective on a complex issue, such as the academic persistence of dentistry students. In line with this, the study aims to develop and implement a program to mitigate the learning losses experienced by dentistry students.

### Research Setting

This study was conducted at the National University - MOA Campus in Pasay City, Philippines, during the First Term of the academic year 2022-2023. This choice of location provides a specific academic environment for investigating learning losses among dentistry students. The National University - MOA Campus is known for its reputable dentistry program and diverse student population, offering a rich context for the study.

Being situated in Pasay City, the research setting captures the cultural and geographical factors that may influence learning outcomes among dentistry students. This adds a valuable dimension to the study, allowing for a deeper understanding of how cultural factors intersect with the construct of interest. The setting's specific cultural context helps to contextualize and generalize the findings within the Philippine context.

The National University - MOA Campus offers a conducive academic environment for data collection and analysis. It provides the necessary infrastructure, resources, and academic support services for administering diagnostic tests and conducting qualitative interviews or surveys. The expertise of faculty members within the campus further enhances the research setting's suitability for investigating learning losses in dentistry students

### Research Participants

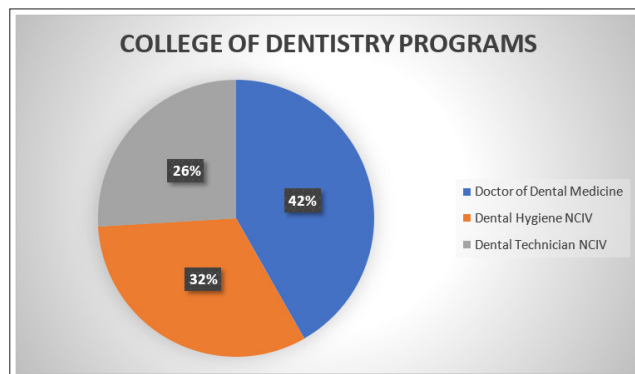
The selection of participants in a research study is a crucial aspect that influences the generalizability and validity of the findings. In this study, the selection of participants was guided by specific criteria to ensure the relevance and applicability of the results to the construct of interest, which is the learning losses of dentistry students.

The sampling technique used in this study was a combination of purposive and convenience sampling, known as multi-sampling. Purposive sampling was employed to target participants who meet specific criteria relevant to the research objectives. In this case, students enrolled in a Dentistry program at the 3rd and 4th-year level were selected. These participants represent a key group to examine as they have progressed in their dental education and are likely to have encountered learning losses.

Additionally, convenience sampling was utilized to select participants who have been enrolled in a university during the AY 2022-2023. This inclusion criterion helps ensure that the participants have recent experience within the educational context under investigation. Both old/continuing students and transferees were considered eligible for participation.

The rationale behind selecting participants who have been continuously enrolled and have not left the institution is to maintain consistency in their academic experiences, particularly in relation to the construct of academic persistence. Previous research suggests that persistence and dropout are influenced by campus-based factors, and by focusing on participants who have remained in the same institution, the study aims to capture the subjective experiences related to academic persistence within that specific context.

The multi-sampling approach allows for a targeted selection of participants based on specific criteria while also considering convenience, ensuring a balance between relevance and feasibility. However, it is important to acknowledge that the use of multi-sampling may introduce certain limitations, such as potential biases and restricted generalizability of the findings beyond the selected sample.



**Figure 1:** Profile of Respondents

The figure above shows that profile of the College of Dentistry students according to their major program, biggest rate is the Doctor of Dental Medicine in that is ranging to 66 students is equal to 41.77%. The next rate is the Dental Technician NCIV equivalent to 51 students is equal to 32.27%. The last is Dental Hygiene NCIV equivalent also to 41 students and is equal to 25.95%. Out of 200, a total of 158, 79% Dentistry students participated in the research study.

Overall, the selection of participants in this study has been carefully designed to include dentistry students at specific stages of their education, who have recent experience within the academic setting of interest. By employing a combination of purposive and convenience sampling techniques, the study aims to capture valuable insights into the learning losses experienced by dentistry students.

### Research Instrument/ Research Questionnaire Diagnostic Examination Test

The research instrument used in this study is a 70-item multiple-choice test focused on the topic of oral pathology. The selection of this instrument is based on its ability to assess the participants' knowledge and understanding of the subject matter, which is reflective of their academic performance in dentistry courses.

The use of a multiple-choice test offers several advantages. Initially, it allows for efficient and standardized data collection, ensuring that all participants are assessed using the same set of questions. This promotes consistency and comparability in the evaluation of learning losses among dentistry students. Additionally, the multiple-choice format enables a wide coverage of the oral pathology topic, encompassing various aspects and subtopics relevant to the subject area.

To measure the learning losses accurately, a reversed scoring approach will be applied to the test. This means that the number of mistakes made by the participants will be noted as an indicator of learning loss. For example, if a student answer 55 out of 70 questions correctly, it corresponds to 15 mistakes, which represents approximately 21% learning loss. This scoring method provides a quantitative measure of the extent to which the participants' knowledge and understanding deviate from the expected level,

reflecting the impact of learning losses on their academic performance.

The choice of the oral pathology topic aligns with the research objective of investigating learning losses among dentistry students. Oral pathology is a fundamental subject in dentistry education, and assessing the participants' knowledge in this area provides valuable insights into their learning experiences and potential gaps in understanding. By focusing on this specific topic, the research instrument ensures that the assessment is directly relevant to the construct of interest and captures the learning losses specific to oral pathology.

### **Interview Guide Questions Referring to the Factors of Learning Losses:**

The interview questions for thematic analysis in this study were derived from an adaptive Interview Guide Questions for Dentistry by author Ryan Brunner, 2022. These questions have been aligned with the factors of learning losses identified by Zhdanov et al. (2022), ensuring their relevance to the research objectives and construct of interest.

The first theme explored in the interviews is "Changes in teaching method." This theme aims to understand the participants' perspectives on their technological proficiency and adaptability to new technologies and equipment. The question, "Do you consider yourself technologically advanced and capable of working with new technologies and equipment?" allows for an exploration of the participants' comfort and familiarity with technology and their perception of its impact on their learning experiences.

The second theme focuses on "Education Opportunities." The question, "What is your self-development plan?" is aimed at eliciting the participants' thoughts and aspirations regarding their professional and personal growth. By understanding their self-development plans, the study seeks to gain insights into the participants' motivation for continuous learning and their perceived importance of ongoing education in the dental field.

The third theme examines the factor of "Less Time for learning." To address this, the question, "What is the most concerning topic facing the dental industry today?" is posed. This question allows participants to reflect on the time constraints they face and express their opinions on the most critical challenges currently impacting the dental industry. It provides an opportunity to explore their awareness of the time limitations in their learning process.

The fourth theme explores the factor of "Less feedback." The question, "Tell us about your overall academic performance through your undergraduate program. Where did you excel and where could you have improved?" prompts participants to reflect on their academic journey and provides insights into their experiences with feedback. Participants can share their perceptions of the feedback they received, including both areas of success and areas where they felt there was a lack of constructive feedback.

The final theme focuses on "Emotional Factors." The question, "What advice would you give to a fellow dental school colleague who was stressed out?" aims to explore the participants' understanding of and coping strategies for managing stress and emotional challenges in the dental school environment. This question provides an opportunity for participants to share their personal insights and recommendations based on their own experiences.

The interview questions used for thematic analysis in this study were derived from an adaptive Interview Guide Questions for Dentistry. The questions were aligned with the factors of learning losses identified in the literature. Through these questions, the study sought to gain insights into participants' perspectives on changes in teaching methods, educational opportunities, time constraints for learning, feedback experiences, and emotional factors. These interview questions provided a rich and comprehensive exploration of the participants' experiences and perceptions related to learning losses in the dental education context.

### **Data Gathering Procedure**

In-depth interviews and diagnostic tests were employed for the goals of this study. In-depth interviews are deep and spontaneous conversations with participants whose goal is to learn about their thoughts, feelings, and opinions in relation to a certain study topic. Personal interviews have the advantage of allowing interviewers and interviewees to interact directly and personally while also reducing non-response rates, but interviewers must possess the essential abilities to conduct an interview properly.

### **Quantitative**

A cloud-based tool created exclusively for survey administration is called Microsoft Forms. It has been agreed that the survey process for the current investigation would be completed digitally. The database containing the completed forms was automatically queried, and the results were calculated.

### **Qualitative**

The purpose of phenomenological interviews was to gather and generate in-depth and detailed descriptions of lived experiences as well as participants' responses to the phenomenon of investigation. Open questions were used to provide a format for interviewees to answer in their own words. The researcher seeks assistance from the Program Chair to discuss and inform the students regarding the interview questions for them to prepare for their answers. Moreover, it is vital to the investigation at hand to identify participants who have both experienced and can discuss lived experiences under examination (Roulston, 2010). He described the relationship of interviewer and interviewee as pedagogical wherein the interviewer's role is to be a student of the interviewee, gaining learning pertaining to the topic of inquiry through sensitive questioning.

Each participant's interview lasted 10 to 15 minutes and was semi-structured for the inquiry. The interviewer probed the participants to gauge how much they liked the setting for the interview. Whether they are standing, sitting, or eating at the appropriate places, the interview must continue. The interviewer uses a purposeful interviewing technique, selecting 5 students at random and including them as the respondents from the Diagnostic Exam.

The purpose of the interview's second phase was to go into more depth on the participants' actual experiences. During the investigation, the researcher asked those who were interviewed to consider and name any influences or circumstances that might have led to the experiences they had reported. It allowed the interviewees to expand on the information in more detail. Every interview was performed using a digital modality at a time and on a day that suited each participant.

Also, unstructured interviews allow for flexibility in the interview's flow, it is possible to draw conclusions about a research topic that was not originally intended. The components of learning losses

were employed as an interview guide for the researcher during the research's conduct as far as data gathering tools were concerned. While the researcher had prepared a few specific questions to help direct the interview toward achieving the study's goals, other topics came up as the interviews progressed.

### Data Analysis

The data gathered from this research study will be subjected to a comprehensive analysis to derive meaningful insights and address the research objectives. The analysis will involve both quantitative and qualitative approaches to provide a comprehensive understanding of the learning losses experienced by dentistry students.

The quantitative data collected through the 70-item multiple-choice test will be analyzed to determine the extent of learning loss among the participants. This analysis will involve calculating the number of mistakes made by each student, which will serve as a measure of learning loss based on a derived scale. The learning loss will be interpreted based on the percentage of mistakes made in relation to the total number of items in the test.

The qualitative data collected through the interviews will be analyzed using a content/thematic analysis approach. This analysis will involve a systematic and in-depth examination of the interview responses to identify common themes and patterns related to the factors influencing learning losses among dentistry students.

### First, the interview transcripts will be transcribed verbatim and reviewed to gain

familiarity with the data. Then, a coding process will be conducted, where meaningful segments of the data will be assigned relevant codes that capture the main ideas and concepts. This coding process will be iterative, with codes being refined and organized into themes as the analysis progresses.

The identified themes will be further analyzed to explore the underlying patterns and relationships between different factors contributing to learning losses. The researcher will examine the content of the responses within each theme to gain a deeper understanding of the participants' perspectives and experiences.

Finally, the quantitative and qualitative findings will be integrated through a comparative analysis, whereby the patterns and themes identified in the qualitative data will be compared and corroborated with the quantitative results. The data analysis conducted in this research study, will provide valuable insights into the learning losses experienced by dentistry students. These findings will serve as a springboard for the development of a proposed learning recovery program. By addressing the identified challenges and tailoring interventions to the specific needs of the students, the proposed program aims to promote effective learning and foster academic success among dentistry students.

### Results and Discussion

This chapter presents the results and discussion derived from the diagnostic exam and thematic/content analysis. The interpretation of the diagnostic exam results offers insights into the extent and nature of learning losses among dentistry students. The thematic/content analysis findings shed light on the underlying factors contributing to these learning losses. Finally, based on the data analyses, two proposed programs for learning recovery are presented, aiming to address the identified challenges and facilitate effective learning outcomes for the students.

### Diagnostic Exam

The administration of the 70-item diagnostic test played a crucial role in evaluating the learning losses among the participants. To interpret the test results accurately, a comprehensive scale was provided. Negative scoring was transformed into percentages to determine the percentage of learning loss for each participant. The scale employed a five-level system, ranging from very low learning loss to very high learning loss, enabling a nuanced understanding of the extent of learning gaps. Importantly, the scale was based on the university's standard grading, reflecting a 60% benchmark to align with the university's established criteria for academic assessment. Within the context of this research, the interpretation of learning loss among the three dental programs relied on this scale, allowing for a meaningful comparison and analysis of the variations in learning gaps between the programs. This approach provided valuable insights into the specific areas requiring improvement. By utilizing this scale and its interpretation, the research was able to effectively assess the learning losses and inform targeted interventions to address the identified gaps in the dental education programs. Table 1 shows the scale range and the corresponding interpretation.

Table 1: Scale Interpretation

Scale range	Interpretation
60% and above	Very High Learning Loss
45% - 59.99 %	High Learning Loss
30% - 49.99 %	Medium Learning Loss
15% - 29.99 %	Low Learning Loss
0% - 14.99 %	Very Low Learning Loss

Table 2: Mean and Standard Deviation of Diagnostic Test Result for Oral Pathology Lab- Descriptive Raw Score Mistakes per Degree Program

	DMD	Dental Hygiene NCIV	Dental Technology Lvl IV
N	66	51	41
Mean	22.7	25.5	26.8
Standard deviation	8.98	7.99	8.65
Minimum	7	12	12
Maximum	40	40	40

Table 2 shows the Mean and Standard Deviation of each Learning Losses per Degree Program from the College of Dentistry such as Doctor of Dental Medicine, Dental Hygiene NCIV, and Dental Technology NCIV.

### Doctor of Dental Medicine

The analysis was conducted on a sample of 66 respondents from the Doctor of Dental Medicine program. The mean learning loss among the participants was found to be 22.7, indicating a relatively low level of learning loss on average. This suggests that, on average, the respondents have retained a significant portion of their knowledge and skills in dentistry courses.

The standard deviation of 8.98 reflects the degree of variability in the learning losses reported by the participants. With a moderate standard deviation, it can be inferred that the learning losses are somewhat evenly distributed around the mean. This indicates that while the average learning loss is low, there are some respondents who experienced higher or lower learning losses than the mean value.

Examining the range of learning losses, we observe a minimum value of 7 and a maximum value of 40. This wide range indicates that there is significant variation among the respondents in terms of the extent of their learning losses. While some individuals had relatively minimal learning losses (scored as low as 7), others experienced higher levels of learning loss (reaching up to 40). These findings suggest that although the mean learning loss is low, there is still a considerable range of learning losses among the respondents.

#### **Dental Hygiene NCIV**

The analysis encompassed a sample of 51 participants enrolled in the Dental Hygiene NCIV program. On average, the respondents exhibited a relatively low level of learning loss, as indicated by a mean score of 25.5. This suggests that the majority of participants retained a significant portion of their knowledge and skills in their respective courses.

Examining the standard deviation of 7.99, which measures the variability in learning losses, it is evident that the reported experiences varied to a moderate extent. This implies that while the average learning loss was low, individual experiences ranged both above and below the mean value.

Analyzing the range of learning losses, we observed a minimum score of 12 and a maximum score of 40. This wide range indicates significant variation in the extent of learning losses among the respondents. Some individuals reported relatively minimal learning losses (as low as 12), while others experienced higher levels (up to 40).

These findings highlight the heterogeneity of learning losses among the 51 participants from the Dental Hygiene NCIV program. Although the mean learning loss was low, it is crucial to address the specific areas where higher learning losses were identified.

#### **Dental Technology NCIV**

The analysis encompassed a sample of 41 participants who were enrolled in the Dental Technology NCIV program. The findings indicated that the participants experienced a moderate level of learning loss, with an average score of 26.8. This suggests that, on average, the participants were able to retain a substantial portion of their knowledge and skills in their respective courses.

The standard deviation of 8.65 indicated a moderate amount of variation in learning losses among the participants. This implies that individual experiences varied, with some participants reporting higher or lower learning losses compared to the average value.

The range of learning losses observed in this study ranged from 12 to 40, reflecting a considerable diversity in the extent of learning losses among the participants. Some participants reported relatively minimal learning losses, while others experienced higher levels of learning loss.

These findings underscore the importance of addressing the specific areas where higher learning losses were identified among the 41 participants from the Dental Technology NCIV program.

The results on the learning losses among the Doctor of Dental Medicine (DMD), Dental Hygiene, and Dental Technology programs revealed variations in the mean learning loss scores and their corresponding interpretations. The key takeaways from the previous analyses of learning losses in the Doctor of Dental

Medicine (DMD), Dental Hygiene, and Dental Technology programs are as follows:

**Overall Low Learning Loss:** Across all three programs, the mean learning loss scores indicated a low level of learning loss. This suggests that the students in these dental programs were able to retain a significant portion of their knowledge and skills in their general courses.

**Consistency in Learning Retention:** Despite variations in curriculum and focus areas, the students in the DMD, Dental Hygiene, and Dental Technology programs demonstrated similar levels of learning retention. This suggests that the educational approaches employed in these programs were effective in facilitating learning and knowledge retention.

**Individual Program Differences:** While the overall learning losses were low, there were slight variations in the mean learning loss scores among the programs. The Dental Hygiene and Dental Technology programs had slightly higher mean learning loss scores compared to the DMD program. This indicates that there may be specific factors influencing learning retention within each program that warrant further investigation.

Overall, this highlights the positive efforts made by students in mitigating learning losses and the effectiveness of the educational approaches employed in these dental programs. These findings provide valuable insights for educators, administrators, and policymakers to further enhance dental education and support students' learning outcomes.

#### **Thematic Analysis**

The open-ended interviews were conducted in adherence to the protocols and minimum health standards mandated by CHED and IATF to minimize the risk of COVID-19 transmission. The participants' responses were recorded, transcribed, and organized for analysis. Thematic/content analysis, guided by the Factors of Learning Losses framework, was employed to identify recurring themes and patterns within the data. This approach allowed for a comprehensive exploration of the various factors contributing to learning losses among the participants.

#### **Interview Guide Questions: (Referring to the Factors of Learning Losses)**

The participants explained how they handled and adjusted to the difficulties they encountered: "All the participants experience adjustment during the online learning, it is a major problem for those who will be taking up Laboratory curriculum for Dentistry students."

#### **Changes in Teaching Method**

##### **IQ 1: Do you consider yourself technologically advanced and capable of working with new technologies and equipment?**

The text excerpts below provided reveal some common themes related to the participants' perspectives on being technologically advanced and capable of working with new technologies and equipment. While the responses vary in their wording and emphasis, they generally highlight a mixture of challenges, opportunities, and beliefs regarding technology integration in their learning experiences.

One theme that emerges is the comparison between online learning and traditional face-to-face instruction. Participants express a preference for the traditional classroom setting, highlighting the benefits of hands-on practice and interaction. They perceive

limitations in online learning, citing difficulties with internet access, sharing devices, and scheduling conflicts. These challenges may hinder their ability to fully engage with and understand the lessons. However, some participants also acknowledge the convenience and flexibility afforded by online learning.

Another theme centers around the participants' readiness to adapt to technological advancements and equipment. There is a sense of optimism and confidence expressed by several respondents, indicating their belief in their capability to learn and utilize new technologies effectively. They view technology as an integral part of their dental education and recognize the importance of mastering these skills for their future practice.

Overall, the common themes in the text reflect a nuanced perspective on being technologically advanced. While there are reservations and challenges associated with online learning and technology integration, participants also recognize the need to adapt and acquire the necessary skills. Their experiences highlight the importance of striking a balance between traditional and technological approaches to enhance their learning and clinical practice. These can be extracted from the transcripts below.

“Yes, My experience in an online learning platform is not as effective as face-to-face way before in understanding my lessons. It gives me free time and space for me to do multitask whatever I'm doing at home. But for me, the best traditional learning modality is still that I am inside the classroom, it has a big difference outcome since you can practice with the actual and interact inside the classroom.”

“Yes, It is our privilege to be prepared as a dentist student for a change, dental educators must teach and demonstrate the desired model of clinical practice. Using good community practice as a model, school dental clinics should strive to be more patient-friendly, more efficient, and provide greater volume and scope of clinical experience to their students. All dental graduates are eligible for her one-year postgraduate education with an emphasis on continuing education in general dentistry.”

“Masasabe ko pong naging hassle po saken yung online class, hindi naman po kasi lahat kami may internet sa bahay, hindi din po lahat sa may lapto na sarili kaya naghihiraman pa kami ng kapatid ko. Dagdag mo pa dito yung madalas na nagsasabay yung online class naman. Madalas di na ko nakakapasok at pinapaubaya ko nalang sa nakakabata kong kaparid para makaattend sya sa klase nya, mahirap po per buti meron iba sa mga professor ko po eh maunawain at nagbibigay ng consideration basta magsabi ka lang bakit di ka nakapasok”

“Since we've been born in 20th century, and 20th century is what we call an advance technology students wherein a little kid can learn using computers. I can say, yes I am capable of working with new technologies since matututunan naman sya along the way and the other equipments as well since part eto ng course ko, so I really have to study it well para din ma apply ko sya In my board performance”

“I believe yes. Although the advancements are fast, I think I can adapt to the technological and equipment advances”

In addition to the common themes identified in the previous analysis, it is important to consider the broader context of the participants' experiences and the challenges posed by the transition to online learning. Research studies have shown that a significant

number of instructors were required to teach online for the first time, highlighting the sudden and unprecedented nature of the shift.

It is widely acknowledged that technology cannot fully replace the rich learning interactions that take place in a physical classroom setting (Education Endowment Foundation, 2020). The abrupt shift to distance education may have resulted in learning losses, particularly among younger age groups who may be less familiar with the online learning environment. However, it is worth noting that providing access to education through technology has the potential to offer some benefits during school closures.

These additional insights highlight the complexities and challenges associated with the transition to online learning. The participants' perspectives on being technologically advanced and capable of working with new technologies and equipment should be understood within the broader context of the education system's response to the COVID-19 pandemic. It underscores the importance of addressing the learning gaps and providing adequate support to students as they navigate these changes.

### Education Opportunities

#### **IQ 2: We believe in the continual development of our students, both professionally and personally. What is your self-development plan?**

The common themes that emerge from the interview reflect the aspirations and goals of the students in terms of their professional and personal development.

One recurring theme is the importance of practical experience and exposure to qualified colleagues. Students express their desire to participate in accredited clinical courses, observe experienced professionals, and undergo evaluations and assessments. This highlights their commitment to acquiring the necessary skills and knowledge in their field of study, particularly in areas like dental implant restorations.

Another theme revolves around the students' determination to succeed in their academic journey and future careers. They express their intentions to address their own issues and problems, graduate from college, and achieve success in life. This demonstrates their motivation and drive to overcome challenges and fulfill their potential as students and future professionals.

Self-development is also a significant theme among the students. They emphasize the importance of recognizing their strengths and weaknesses, understanding the causes of their weaknesses, and making efforts to improve. This reflects their awareness of personal growth and their willingness to undertake self-reflection and self-improvement to become better versions of themselves.

Additionally, community service and a commitment to ongoing education emerge as themes. Students express their motivation to serve their communities by providing dental care and highlight the significance of continuous learning in their field. They acknowledge the need for continual education and professional growth to deliver high-quality care to their patients.

Overall, these common themes demonstrate the students' dedication to their chosen profession, their desire for personal development, and their commitment to making a positive impact in their communities. These were exemplified from the following statements:

“By participating in accredited clinical courses, witnessing qualified colleagues, and having qualified colleagues oversee dental implant restorations and subsequent job assessments, we hope to achieve this. The results of work-related evaluations, reflections, and attendance certificates serve as proof of this”

“Start working on my own issues and problems, graduate in college, and become successful in life”

“I will complete a recognized training course with specific goals for learning during this time and receive a certificate. A discussion of the course outcomes will be included in my PDP to determine whether it is necessary and when to complete it”

“If ever po na di ko matapos ang pagiging Dentist student, baka mag pursue nalang po ako ng ibang medicine course. Magastos din po kasi ang Dentistry program, sa told ko po na working student mahirap po pagkasyahin yung allowance at kinikita ko po plus mga gamit po na kelangan para sa mga actual laboratory namin”

“I became very motivated to serve individuals in my community by offering dental care after volunteering at the local dental clinic. For experts in this sector, continual education is crucial, in my opinion. I want to give my patients the highest caliber of care available by pursuing ongoing education and professional growth.”

“I think one of my self-development plans is to accept everything that needs to be improved in order to function well and orderly”

“I would first point out my strengths and weakness. Then, know the causes of my weakness so I would know how I would change or improve it. I would focus more on improving my weaknesses first and once I’ve done it, I can focus on”

In addition to the previous analysis, the given text also touches upon the impact of school closures and the potential disparities in access to online learning materials and equipment. It acknowledges that children who lack access to these resources may face difficulties in participating in various learning activities. This highlights the unequal opportunities for students from different socioeconomic backgrounds.

Research suggests that school closures may disproportionately affect children from lower socioeconomic backgrounds, as they may not experience the same improvement in performance during periods when school is not in session compared to their peers from higher socioeconomic backgrounds. This disparity in learning opportunities during school closures has been noted in previous studies.

These findings underscore the importance of considering the socioeconomic context in relation to learning losses and the challenges faced by students during periods of disrupted education. The unequal access to online learning resources and equipment can contribute to widening educational gaps among students from different socioeconomic backgrounds.

In summary, the analysis of the given text highlights the impact of school closures on students’ access to online learning materials and equipment, and the potential disparities in learning outcomes based on socioeconomic backgrounds. It emphasizes the need to address these inequalities and ensure equitable opportunities for all students, particularly during times of educational disruption.

## Time for Learning

### IQ 3: In your opinion, what is the most concerning topic facing the dental industry today?

The common themes expressed in the interview provide insights into the most concerning topics facing the dental industry today. One of the main concerns highlighted by the students is the fear and apprehension associated with performing root canal treatments (RCT) and dental implants. They express concerns about potential adverse reactions or complications that may arise from these procedures, indicating the importance of ensuring patient safety and minimizing risks.

Another common theme identified is the lack of effective communication within the dental industry. Students emphasize the significance of communication in dental practice, both in terms of effective communication between professors and students for better understanding and minimizing gaps, as well as the need for improved patient communication and engagement. The students believe that effective communication strategies, such as regular check-ins or calls with patients and engaging advertisements, can enhance patient awareness and encourage regular dental check-ups.

Furthermore, the responses highlight a perception issue faced by the dental profession. Some students mention that dentists are often underestimated and that people may not fully understand the comprehensive training and expertise that dentists possess. This suggests a need for greater recognition and awareness regarding the role and capabilities of dentists as healthcare professionals.

Overall, these themes shed light on the concerns and areas of improvement within the dental industry, such as ensuring patient safety during complex procedures, enhancing communication strategies, and addressing the perception and recognition of dentists as valuable healthcare providers. These claims were based on the following statements:

“ Siguro having RCT and Implants are the most concerning topics for me since I am still scared to have an adverse reaction to the patient caused by the foreign body being inserted/ replaces and implanted on the oral cavity”

“Siguro po when it comes to communication, dyan po Malaki ang lack namen as Dentistry students. Thru communication po kasi kami ang pinaka importante at mahalagang process pagdating sa pag-aaral, pag di po kasi nagkaintindihan ang Prof at student, dyan po nagkaron ng gap, and it may lead to misunderstands kung ano man po yung pinararating ng student.”

“I see communication as lacking for the dental industry. I mean, we can see ads from different platforms but there’s no engagement factor that could give patient an attention or awareness that we really need to check up our teeth. I mean its not because “syempre may life siya pupunta yan pag gusto niya” parang ganon in my own perspective lang po i think there’s really lacking sa communication siguro pwedeng regularly i-check or icall si patient like para magkanengagement pa parang more boosting po ng ads ganon”

“That dentists are not real doctors. People tend to underestimate dentists, and they do not know what dentists do and can do. Dentists have also gone training to be a doctor, it is just that their focus is oral health”

“Marami po kasi ang nagdedentist sa panahon ngayon, tho in-demand naman talaga sya, at Malaki po kasi ang importance ang pag aaral ng Dentistry, hindi lang naman po kaming student ang nagbebenefit dito, pati po ang mga taong nangangailangan ng oral health care. Kami po ang umaaral sa mga ganong cases nila.

The respondents in the previous analysis expressed a desire to expand their knowledge in certain areas of dentistry. They highlighted the need to learn more about oral symptoms of systemic disorders, treatment of medically compromised patients, and screening for oral cancer. This aligns with the findings of Chan et al., who reported that dentists prioritize courses in aesthetic dentistry and implant dentistry for their continuing education.

Furthermore, the respondents recognized the importance of addressing medical crises, infection control, and the care of patients with medical complications. These areas were identified as the key continuing education tasks by participants, as indicated by Bailey et al. This emphasizes the significance of equipping dentists with the necessary skills and knowledge to handle complex medical situations and ensure patient safety.

Additionally, the respondents’ interest in endodontics and cosmetic dentistry for continuing education aligns with the findings of Nayak et al. This suggests a growing trend among dentists to focus on these specific areas and further develop their expertise.

Overall, the respondents’ desire to expand their knowledge in areas such as oral symptoms of systemic disorders, treatment of medically compromised patients, oral cancer screening, and specific dental procedures reflects their commitment to professional growth and the importance of continuing education in the dental industry.

### Less Feedback

#### **IQ 4: Tell us about your overall academic performance through your undergraduate program. Where did you excel and where could you have improved?**

The common themes observed in this interview revolve around the respondents’ self- assessment of their skills and performance in the dental field.

One theme is the recognition of strengths and areas for improvement. Some respondents acknowledged their excellence in practical skills while recognizing the need for improvement in theoretical knowledge. This demonstrates self-awareness and a desire to enhance their foundational understanding.

Another theme is the aspiration to provide inclusive and accessible dental care. Respondents expressed a commitment to serving patients with unique needs and emphasized the importance of inclusiveness, diversity, and respect in their future practice. This reflects their awareness of the importance of providing comprehensive and patient-centered care.

Communication skills emerged as a significant area for improvement. Some respondents highlighted their challenges in effectively communicating, particularly for shy individuals. They acknowledged the need to enhance their communication abilities to establish better rapport with patients and colleagues.

The importance of continuous learning and practice was also evident. One respondent recognized the necessity of practicing at home to improve their laboratory skills, acknowledging the combination of art and science in dentistry. Another respondent

expressed the need to enhance their knowledge and proficiency in using dental tools and equipment for various procedures.

Overall, these common themes highlight the respondents’ self-reflection, commitment to improvement, and recognition of the evolving nature of the dental profession. It indicates their determination to develop their skills and provide high-quality dental care in a patient- centered and inclusive manner. Below are statements that supports these findings.

“I think I excel well in practicals rather theoreticals. I should have improved and read well intrinsically during my predent years since it’s the foundation.

“As a future dentist, I believe that accessibility and inclusion for clients with a range of physical and behavioral needs are fundamental components of my work. I want to start a clinic that focuses on providing care for patients with unique needs. Since your program values inclusiveness, diversity, and respect,”

“I think as a shy person, I have a hard time communicating po and that’s what I need to improve on myself”

The other interviewee stated the preparedness in doing laboratory.

“I don’t think that I’ve excelled already on something. As someone who isn’t really artistic, it is hard to keep up with some lab activities, knowing dentistry is a combination of art and science. With that, I practice at home like the preps to improve my lab activities”

“I can say po na I’m not still knowledgeable about the tools and equipment na ginagamit, yet I need and have to improve myself in being knowledgeable enough na matutunan ang tamang paggamit ng mga equipments na ginagamit po sa pagbubunot, paglilinis at pag aayos ng mga ipin”

Adding to the previous analysis, it is important to note the reference to being sensitive to student’s needs and linking them to broader issues that impact society. The mention of COVID-19 as a “speed bump” that urges us to pause and contemplate the larger agenda further emphasizes the need for adaptability and resilience in the face of challenges. The quote from Sapon-Shevin and SooHoo (2020) suggests that the pandemic can serve as an opportunity for reflection and a call to address pressing societal issues. This perspective aligns with the respondents’ recognition of the evolving landscape of dentistry and their commitment to inclusive and patient-centered care. It emphasizes the importance of being responsive to changing circumstances and considering the wider implications of their professional roles.

### Emotional Factors

#### **IQ 5: What advice would you give to a fellow dental school colleague who was stressed out?**

The common themes in the provided responses revolve around offering advice and encouragement to fellow dental school colleagues who may be experiencing stress. The respondents emphasize the importance of taking care of oneself, not pushing too hard, and finding enjoyment in life. They encourage trusting the process, having faith in oneself and a higher power, and believing in the journey towards becoming a successful dentist.

The messages convey a sense of perseverance, reminding their peers that although the path may be challenging and confusing, it will be worth it in the end. They suggest not rushing and instead

embracing the process, while also acknowledging the normalcy of feeling stressed and providing suggestions for stress relief, such as spending time with loved ones or indulging in small pleasures like eating ice cream.

Overall, the responses convey empathy, support, and resilience in the face of the demanding nature of dental school, offering words of encouragement to their fellow colleagues who may be struggling. Here are some excerpts where the claims were based.

‘Take time for yourself, don’t push yourself too much and too hard. Still enjoy your life’  
 “Always trust the process and there’s Lord who will guide us and become a successful one”

“To never give up your dreams. It may be hard, challenging, and confusing right now, but it will be all worth it soon. Padayon future DMDs!”

“I know it’s a very long way to go, but you are halfway there. Trust in yourself that you can make it. The day will come and you will say that all the stress you have encounter are all worth it”

“Do not rush, just trust the process, and believe in yourself!”

“It’s okay to feel stressed out, just let it all out, eat ice cream, spend some time with your friends or family to help you get back on your track, and keep on fighting!”

The common themes in the previous text revolve around offering advice and support to fellow dental school colleagues who are feeling stressed. The respondents emphasize the importance of taking care of oneself, not pushing too hard, and enjoying life. They encourage trusting the process and having faith in oneself and a higher power. The messages convey the idea of perseverance and not giving up on dreams, acknowledging that the journey may be challenging but ultimately rewarding. The respondents also highlight the significance of self- belief, patience, and the understanding that stress is normal. They suggest coping strategies such as seeking solace in loved ones, indulging in enjoyable activities, and maintaining a fighting spirit.

After conducting a thematic analysis of the provided text, several key themes have emerged.

- **Learning Loss and Adaptation:** Respondents expressed concerns about learning losses, particularly in the context of transitioning from traditional face-to-face learning to online platforms. They highlighted the importance of practical learning and the challenges of adapting to new technologies and equipment.
- **Professional and Personal Development:** The text revealed a strong focus on the respondents’ aspirations for professional growth and personal development. They expressed a desire to excel in practical skills, improve communication abilities, and address areas of weakness. The importance of continuing education, inclusivity, and providing quality care to patients with unique needs was also emphasized.
- **Confidence and Skill Development:** The respondents discussed their confidence levels and the need for improvement in various aspects of dentistry. They acknowledged the importance of building knowledge, refining laboratory skills, and becoming knowledgeable about dental tools and equipment. The themes highlighted both the strengths and areas of improvement within the dental profession.

- **Stress and Support:** The text provided insights into the stress experienced by dental students and the importance of self-care and support. Respondents encouraged fellow colleagues to trust the process, persevere, and not be too hard on themselves. They emphasized the significance of taking breaks, seeking enjoyment, and seeking support from friends and family during challenging times.
- **Societal Perception and Communication:** There was a recurring theme related to the perception of dentists in society and the importance of effective communication. Respondents highlighted the need to educate the public about the role of dentists, promote engagement in dental care, and improve communication between dental professionals and patients.

**Table 3: Deduction of Concepts**

General Concept	ID
Assessing the Factors of Learning Losses	
1. Changes in teaching method makes it hard for me to learn P1, P2, P3, P4, P5	
2. Professional Growth 3. Improving Weakness	P1, P3, P5 P2, P4
4. Work-related evaluation 5. Lacking in Communication 6. Definition and Importance of being a Dentist	P1 P2, P3 P4, P5
7. I excel in practicals than theoreticals P1 8. Readiness and Improvement of self P2, P3, P4, P5	
9. Take time for yourself, don’t push yourself too much and too hard. Still enjoy your life 10. Trust the process and always believe in yourself 11. Never give up on your dreams	P1 P2,P4,P5 P3

The integration of the information provided in the Deduction of Concepts table enriches the overall synthesis of the thematic analysis. The challenges faced by students in adapting to changes in teaching methods align with the theme of learning losses, highlighting the difficulties encountered in the educational process. Respondents’ aspirations for professional growth underscore their commitment to continuously improving their skills and knowledge within the field of dentistry. Moreover, their recognition of personal weaknesses signifies a dedication to self-improvement and ongoing development.

The mention of work-related evaluations emphasizes the importance of performance assessment and feedback in the professional realm, demonstrating an awareness of the need for continuous evaluation. Additionally, the acknowledgment of lacking communication skills underscores the significance of effective communication within the dental industry, highlighting the desire for improvement in this area. The discussion on the definition and importance of being a dentist reflects the respondents’ perspectives on their profession and the value they attribute to their role in providing oral health care.

Furthermore, the statement about excelling in practicals rather than theoreticals suggests a preference for hands-on learning experiences and the application of dental skills in real-world scenarios. The emphasis on readiness and self-improvement further showcases the respondents’ dedication to ongoing learning and personal growth throughout their dental education. The advice to take time for oneself and enjoy life acknowledges the importance of work-life balance and self-care in managing the stresses associated with dental school.

The recurring theme of trusting the process and believing in oneself reflects the resilience and determination expressed by the respondents, reinforcing their confidence in navigating the challenges they face. Finally, the encouragement to never give up on dreams encapsulates the aspirational nature of pursuing a career in dentistry, emphasizing the perseverance required to overcome obstacles and achieve long-term goals.

By integrating these specific points into the synthesis, the analysis becomes more comprehensive, encompassing the diverse perspectives and experiences of the respondents regarding learning losses, professional growth, self-improvement, communication, and the significance of being a dental professional.

### **Triangulation of Results**

The synthesis of the results from the diagnostic test and the thematic analysis reveals valuable insights into the learning experiences and perspectives of dental students.

The diagnostic test results indicated that overall, the mean learning loss scores among Doctor of Dental Medicine (DMD), Dental Hygiene, and Dental Technology programs were low, suggesting that students were able to retain a significant portion of their knowledge and skills. This reflects the effectiveness of the educational approaches employed in these programs and the students' efforts in mitigating learning losses.

The thematic analysis identified key themes that further enrich our understanding of the students' experiences. The themes of learning loss and adaptation highlight the challenges students faced in transitioning to online learning and the importance of practical learning. This aligns with the findings from the diagnostic test, emphasizing the need for continued support and improvement in delivering effective online education.

The theme of professional and personal development showcases the aspirations of dental students for growth and improvement. They expressed a desire to excel in practical skills, improve communication abilities, and provide inclusive care to patients with unique needs. These findings emphasize the importance of continuing education, fostering inclusivity, and promoting quality patient care within dental education.

The theme of confidence and skill development highlights the students' self-assessment of their strengths and areas for improvement. It underscores the significance of knowledge acquisition, refining laboratory skills, and becoming proficient in using dental tools and equipment. These insights can inform curriculum enhancements and faculty support to address specific areas of skill development.

The theme of stress and support underscores the challenges faced by dental students and the importance of self-care and support systems. The students encouraged each other to trust the process, take breaks, and seek enjoyment amidst the demanding nature of their studies.

These findings highlight the need for comprehensive support mechanisms, including mental health resources and a supportive learning environment.

Lastly, the theme of societal perception and communication sheds light on the students' concerns regarding the public's understanding of dentistry and the need for effective communication. They

emphasized the importance of education and engagement to promote oral health and bridge the gap between dental professionals and patients.

Overall, the synthesis of the diagnostic test and thematic analysis reveals the commitment of dental students to their education, their drive for professional and personal development, and their desire to provide quality care to patients. These insights can inform educators, administrators, and policymakers in enhancing dental education, promoting student well-being, and improving communication and public perception of dentistry.

### **Proposal of a Learning Recovery Program**

The results from the diagnostic test and thematic analysis can provide valuable insights and guidance in drafting a comprehensive learning recovery program for dental students. Here are some ways in which these results can be utilized:

**Understanding Learning Loss:** The diagnostic test results indicating low levels of learning loss across programs can inform the development of targeted interventions. The program can focus on areas where students demonstrated slightly higher learning loss scores, such as the Dental Hygiene and Dental Technology programs. This understanding can guide the allocation of resources and support to address specific challenges within each program.

**Adapting to Online Learning:** The thematic analysis highlighted the challenges students faced in transitioning to online learning. This information can inform the design of the learning recovery program by incorporating strategies to address these challenges. It may include targeted training on online learning platforms, enhancing practical learning opportunities through innovative virtual simulations or hands-on workshops, and providing additional support and resources for students to adapt effectively to online learning environments.

**Promoting Professional and Personal Development:** The themes of professional growth, skill development, and personal improvement identified in the thematic analysis can be integrated into the learning recovery program. The program can include targeted workshops, seminars, and mentorship opportunities that focus on enhancing practical skills, improving communication abilities, and addressing areas of weakness. Encouraging students to engage in continuing education and providing resources for their professional development can also be incorporated.

**Supporting Student Well-Being:** The theme of stress and support underscores the importance of student well-being in the learning recovery process. The learning recovery program can incorporate strategies to support students' mental health and overall well-being. This may include providing access to counseling services, implementing stress management programs, and creating a supportive and inclusive learning environment. Additionally, the program can encourage self-care practices and offer resources for students to seek support from friends, family, and peers.

**Enhancing Communication and Public Perception:** The thematic analysis highlighted the students' concerns regarding communication and public perception of dentistry. The learning recovery program can include initiatives to improve

communication skills among students and raise awareness about the role of dentists in society. This may involve workshops on effective communication techniques, community engagement

projects, and educational campaigns to educate the public about oral health and the importance of dental care.

By incorporating the findings from the diagnostic test and thematic analysis, the learning recovery program can be tailored to address the specific needs and challenges identified by the students. This holistic approach will support their academic progress, personal growth, and overall well-being, ensuring a successful learning recovery process.

The following is the Proposed Learning Recovery Program for Dental Students, a comprehensive initiative designed to address the learning challenges and promote the holistic development of dental students in collaboration with the Department of Health (DOH) and the Comprehensive Oral Health Program of the Department of Education (DepEd). This program aims to support dental students in their journey to recover from learning losses caused by the recent educational disruptions and to enhance their knowledge, skills, and well-being.

As dental education faced significant transitions, including the shift to online learning platforms, it is crucial to acknowledge the impact on students' learning outcomes and provide targeted interventions to facilitate their recovery. The findings from both the diagnostic test and thematic analysis have guided the development of this program, ensuring its relevance and effectiveness in meeting the specific needs of dental students.

Aligned with the vision and goals of the DOH and the Comprehensive Oral Health Program of DepEd, this program focuses on not only academic recovery but also professional growth, personal development, and student well-being. By addressing these interconnected aspects, we aim to nurture competent and resilient dental professionals who can effectively contribute to the oral health needs of our communities.

Through the Learning Recovery Program, we will implement a range of initiatives and interventions that target areas of concern identified in the diagnostic test and thematic analysis. These include specialized training on online learning platforms, practical skills enhancement workshops, communication skills development sessions, mentorship programs, mental health support services, and awareness campaigns to promote the role of dentists in society.

Collaboration will be at the core of this program, bringing together educators, administrators, healthcare professionals, and students themselves. We believe that a multidimensional approach, involving various stakeholders, will foster an inclusive and supportive environment conducive to learning and growth. The program will also leverage the resources and expertise available on the Department of Health website (doh.gov.ph) and will work in alignment with the DepEd Comprehensive Oral Health Program to ensure a unified effort in promoting oral health education and care.

Learning recovery program to Mitigate Learning Losses:

Learning recovery program to Mitigate Learning Losses:

**Collaborate to enhance access to care and the oral health status of marginalized groups**

Title of the Program	Rationale	Objectives	Goals	Personnel and the Clients/ Customer	Allotted Budget for the Program/ Venue/ Number of Days to Implement	Actions to be taken
ORAL HEALTH PROGRAM (Marginalized Groups)	For general health and well-being, good oral health is essential. Along with one's physical health, it has a huge impact on their social life, mental health, ability to pursue their professional aspirations, and personal goals. By taking appropriate care of the mouth, teeth, and gums, effective oral hygiene can prevent bad breath, tooth decay, gum disease, and tooth loss. Significant non-communicable diseases like diabetes and cardiovascular problems may also be prevented with its help.	The program intends to give free services such as cleaning, extraction, and other dental treatments in some areas and schools to give access to health services for each person in the subject area.	Achieving a higher quality of life by promoting oral health and receiving high-quality dental treatment.	A. Dental Personnel B. Oral Health Services c. Community of the area such as: - kids - teenagers - adult	100,000 to 150,000 pesos including the materials needed for the program approximately 100 pax.  Venue: Rural Areas in Pasay City  No. of Days: Approximately 3 to 5 days	Teach and inform all students, teachers, and non-teaching staff about proper oral health hygiene practices, oral health nutrition, and the oral health hazards associated with smoking, substance abuse, poor diet, and other lifestyle choices.

In addition to the Learning Recovery Program for Dental Students, we propose a Dental Seminar Program for Future Dentists, a specialized initiative aimed at providing valuable continuing education opportunities and professional development for aspiring dental practitioners. Recognizing the significance of lifelong learning and staying abreast of the latest advancements in the field, this program emphasizes the importance of seeking out accredited and reputable educational resources.

Continuing education plays a crucial role in the growth and success of dental practitioners. It allows dentists to expand their knowledge, refine their skills, and stay updated with the latest research, techniques, and technologies in dentistry. To ensure the highest standard of continuing education, it is essential for dental professionals to seek out accredited programs that are recognized by reputable organizations and institutions.

The Dental Seminar Program for Future Dentists aims to bridge the gap between dental education and the ever-evolving field of dentistry. It offers a platform for aspiring dentists to engage in high-quality educational seminars and workshops facilitated by renowned experts in the field. By collaborating with esteemed organizations such as the American Association of Orthodontists (AAO), the World Federation of Orthodontists (WFO), local dental associations, universities, and specialized orthodontic societies, we provide a diverse range of educational opportunities.

These seminars will cover various areas of dentistry, including but not limited to orthodontics, oral surgery, prosthodontics, endodontics, periodontics, and pediatric dentistry. The program will offer in-depth lectures, hands-on workshops, case discussions, and interactive sessions, allowing participants to enhance their clinical skills, deepen their understanding of dental procedures, and stay updated with the latest advancements in their respective fields of interest.

By participating in the Dental Seminar Program for Future Dentists, participants will have access to a network of experienced professionals, mentorship opportunities, and a supportive learning environment. The program encourages active engagement, collaboration, and knowledge sharing among participants, fostering a community of lifelong learners who are committed to excellence in dental practice

We understand the importance of convenience and accessibility in continuing education. Therefore, the program will be designed to accommodate various learning modalities, including in-person seminars, webinars, online courses, and interactive virtual sessions. This will ensure that aspiring dentists from different locations can benefit from the program and engage in continuous professional development.

### Dental Seminars for future Dentists

Title of the Program	Rationale	Objectives	Goals	Personnel and the Clients/ Customer	Allotted Budget for the Program/ Venue/ Number of Days to Implement	Actions to be taken
Continuing Education for Dental Practitioners (Orthodontics treatment planning)	Continuing education is an essential aspect of professional development for dental practitioners, including those specializing in orthodontics and treatment planning. Advancements in technology, techniques, and research occur regularly in the field of orthodontics, making it crucial for practitioners to stay up to date to provide the best possible care for their patients.	Continuing education programs offer opportunities for dental practitioners to expand their knowledge and skills, refine their techniques, and enhance their understanding of orthodontic treatment planning. These programs can take various forms, including seminars, workshops, conferences, online courses, and hands-on training sessions.	By actively engaging in continuing education, dental practitioners can remain at the forefront of orthodontic treatment planning, provide high-quality care to their patients, and enhance their professional growth and satisfaction.	A. Dental Personnel B. Dentistry Faculty C. Dentistry Program Chairs D. Dentistry students	Registration fee: 500 pesos Venue: SMX Convention Center  No. of Days: 2 days seminar	Dental practitioners can focus on their continuing education related to orthodontic treatment planning. 1.Diagnosis and Treatment Planning 2.Digital Orthodontics 3.Esthetic Considerations 4.Multidisciplinary Approach 5.Advanced Orthodontic Techniques 6.Practice Management 7.Evidence-Based Orthodontic

### Summary, Conclusion and Recommendation

In this chapter, the researcher concentrated on clarifying the information gathered from the interview questions utilizing an existing diagnostic test and an existing interview guide question set pertaining to the factors of learning losses. This chapter presents the findings executive summary.

### Summary of Findings

The summary of findings based on the quantitative and qualitative data analyzed is as follows:

#### Quantitative Data

- **Learning Loss:** The mean learning loss scores across the Doctor of Dental Medicine (DMD), Dental Hygiene, and Dental Technology programs indicated a low level of learning loss. This suggests that the students in these dental programs were able to retain a significant portion of their knowledge and skills in their general courses.
- **Consistency in Learning Retention:** Despite variations in curriculum and focus areas, the students in the DMD, Dental Hygiene, and Dental Technology programs demonstrated similar levels of learning retention. This implies that the educational approaches employed in these programs were effective in facilitating learning and knowledge retention.
- **Individual Program Differences:** While overall learning losses were low, there were slight variations in the mean learning loss scores among the programs. The Dental Hygiene and Dental Technology programs had slightly higher mean learning loss scores compared to the DMD program. This suggests the presence of specific factors influencing learning retention within each program.

## Qualitative Data

- **Learning Loss and Adaptation:** Respondents expressed concerns about learning losses, particularly in transitioning to online platforms. They highlighted the importance of practical learning and the challenges of adapting to new technologies and equipment.
- **Professional and Personal Development:** Respondents expressed aspirations for professional growth, improvement in communication skills, and addressing areas of weakness. They emphasized the importance of continuing education, inclusivity, and providing quality care to patients with unique needs.
- **Confidence and Skill Development:** Respondents discussed their confidence levels and the need for improvement in various aspects of dentistry. They acknowledged the importance of building knowledge, refining laboratory skills, and becoming knowledgeable about dental tools and equipment.
- **Stress and Support:** Respondents acknowledged the stress experienced by dental students and emphasized the significance of self-care, seeking enjoyment, and support from friends and family during challenging times. They encouraged trusting the process and persevering through difficulties.
- **Societal Perception and Communication:** Respondents highlighted the need to educate the public about the role of dentists, promote engagement in dental care, and improve communication between dental professionals and patients.

## Conclusions

Based on the findings, several conclusions can be drawn:

- **Overall Learning Retention:** The dental programs analyzed showed a low level of learning loss, indicating that students were able to retain a significant portion of their knowledge and skills. This suggests that the educational approaches employed in these programs were effective in facilitating learning and knowledge retention.
- **Adaptation Challenges:** The transition to online platforms posed challenges for students, particularly in terms of practical learning and adapting to new technologies and equipment. This highlights the need for innovative teaching methods and supportive resources to ensure effective learning in virtual environments.
- **Professional Growth and Personal Development:** Dental students expressed a strong desire for professional growth, improvement in communication skills, and addressing areas of weakness. This emphasizes the importance of providing opportunities for continuing education, fostering inclusive practices, and promoting the development of well-rounded dental professionals.
- **Confidence and Skill Development:** Students acknowledged the need for ongoing improvement in various aspects of dentistry and expressed a desire to build their knowledge and refine their laboratory skills. This underscores the importance of offering comprehensive training programs and resources that enhance confidence and competence in dental practice.
- **Well-being and Support:** The findings highlight the significance of addressing stress and promoting self-care among dental students. Establishing support systems, encouraging work-life balance, and providing resources for managing stress can contribute to the well-being and success of future dental practitioners.
- **Communication and Public Perception:** The need for improved communication between dental professionals and patients, as well as public education about the role of dentists, was emphasized. Enhancing communication skills and engaging in proactive outreach can help bridge the gap

between dental practitioners and the public, leading to better oral health outcomes.

Overall, the conclusions drawn from the findings underscore the importance of creating a conducive learning environment, supporting personal and professional development, addressing challenges in adaptation, and fostering a holistic approach to dental education.

## Implications

Based on the findings and conclusions mentioned, the following implications could be suggested:

- **Curriculum Enhancement:** The findings suggest a need for curriculum enhancements that prioritize practical learning and provide opportunities for students to adapt to new technologies and equipment. Integrating hands-on experiences, simulation exercises, and virtual learning platforms can help bridge the gap between theoretical knowledge and clinical practice.
- **Professional Development Programs:** The emphasis on professional growth and addressing areas of weakness highlights the importance of offering comprehensive continuing education programs. Dental schools and professional organizations should collaborate to provide accredited and reputable courses that cover a wide range of topics, including communication skills, emerging dental technologies, and specialized fields of dentistry.
- **Support Systems:** Recognizing the stress experienced by dental students, it is crucial to establish support systems that promote their well-being. Implementing mentorship programs, counseling services, and stress management resources can help students cope with academic pressures and maintain a healthy work-life balance.
- **Communication and Public Engagement:** Improving communication skills and engaging in public outreach initiatives can have a positive impact on the perception of dentists and oral healthcare. Dental schools should integrate communication training into their curriculum and collaborate with local dental associations and organizations to raise awareness about the importance of oral health and the role of dental professionals.
- **Research and Innovation:** The findings provide opportunities for further research and innovation in dental education. Identifying effective teaching methods, exploring the impact of emerging technologies on learning outcomes, and evaluating the long-term effects of curriculum enhancements can contribute to continuous improvement in dental education and practice.
- **Collaboration and Partnerships:** Strengthening partnerships between dental schools, professional organizations, and healthcare agencies can enhance the quality of dental education and support the development of future dentists. Collaboration can lead to shared resources, mentorship opportunities, and the exchange of best practices to optimize learning experiences for dental students.

Overall, the implications of these conclusions emphasize the importance of a student-centered approach, ongoing professional development, and the integration of innovative strategies to meet the evolving needs of dental education and practice.

## Recommendations

If disparities in health status and access to oral health care are to be addressed, public support is essential. Therefore, this committee advises that all members of the dental profession cooperate to secure more adequate public and private funding for private dental

care, public health initiatives, and community outreach initiatives, including those carried out by dental school faculty and students.

- **Advocate for Increased Funding:** The committee advises all members of the dental profession to advocate for more adequate public and private funding for dental care, public health initiatives, and community outreach programs. This increased support can help address disparities in health status and access to oral health care.
- **Collaborative Efforts for Effective Oral Health Services:** Dental educators, practitioners, researchers, and public health officials should collaborate closely to ensure the provision of effective and efficient oral health services. This collaboration should focus on enhancing the oral health status of both individuals and communities.
- **Addressing Workforce Disparities:** Dentistry personnel should actively take steps to address workforce disparities by increasing the number of dentists working in underserved areas. This can improve the accessibility of dental care in these areas and mitigate the negative impact of high financial responsibility on students.
- **Curriculum Improvement in Dental Schools:** Dental schools should establish explicit goals, methods, and schedules for updating their curricula. This should include removing minimally useful and superfluous course content and reducing excessive course loads. These improvements will encourage progress toward curricular goals that align with the evolving needs of dental education.
- **Collaboration Between Dental and Medical Education:** Dental educators should collaborate with their counterparts in medical schools and academic health centers to train future practitioners in increasingly integrated and medically based approaches to oral health care. This collaboration is particularly important for effectively managing medically complex patients.
- **Practical Experience in Clinics and Faculty Practices:** The committee advises dental students and professors to actively participate in well-managed clinics and faculty practices. This practical experience will better prepare them for a professional environment that demands efficiency, accountability, and evidence-based effectiveness.

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