

Teaching Case

A Database Design and Development Case: Smile Land Academy

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Abstract

This case describes the situation of Smile Land Academy (SLA), a real-world based childcare center. SLA has grown from a very small company to a fairly large-sized organization (30 employees with 150 children). Unfortunately, its system for record-keeping, summarization of data, and reporting has not kept pace. The hard copies and spreadsheet software programs that have been used to manage the data are no longer effective or efficient. This case presents the situation SLA is in as well as the desired system features and outputs that the organization would like in a new system.

Keywords: Case, Project, Database design, Systems Analysis and Design, Project-based learning, Team project

INTRODUCTION

While attending classes at a local college, Victoria Middleton had been working part-time as a child caretaker at a daycare center run by the university. After four years of experience and a bachelors degree in early childhood education, she obtained a State license and started Smile Land Academy (SLA), a daycare center, in her hometown. Her business has steadily grown over the years. What began with only one class of five children and a single caretaker, SLA has grown to where it currently provides services to more than 150 children and employs over 30 part-time and full-time caretakers.

Growing a business has required Victoria to be more efficient with her resources. However, much of her time is currently spent on paperwork. She needs a better way to organize her data and would like a computerized database system to help manage her day-to-day operational activities and provide summary reports.

1. THE CURRENT SYSTEM AND SITUATION

Presently, most data is first recorded on paper and later transferred to a computer file. Victoria keeps a paper copy of all the information in case there are problems with the computer files. Parents and caretakers can check in and out

using paper sign-in sheets or one of the three computers located at the building entrance. Victoria also utilizes a spreadsheet software program to keep track of employee work hours and payroll information. This practice has worked well until recently, when she felt she needed a better way to organize data for easy retrieval. In addition, she would like to be able to see the overall day-to-day operations without having to spend too much time going through her files and papers to create reports.

2. CURRENT DATA PROCESSING DESCRIPTION

This section describes activities performed at SLA.

2.1 Creating a Waiting list. SLA accepts child enrollment applications from parents or guardians all year round. If there is an opening in a class for the child in his or her age range, the child will be immediately accepted and may start attending class as early as the next day. However, SLA rarely has an unfilled seat. As a result, most applications will be placed on a waiting list. Applications on the waiting list are dated and kept in a file folder for the age group (Nursery (i.e., 3-12 months), 1, 2, 3, 4 and 5 years old). An application may be placed on the waiting list for as little as 1 week all the way up to one year. Any application older than one year old will be shredded.

2.2 Processing Initial child registration and enrollment. As soon as there is an open seat in a classroom, Victoria will contact the parents of a child who were next in line on the waiting list for that age group. The parents will be asked to update information on the application as well as complete additional forms including parent/guardian address and phone numbers, family physician information, hospital name and phone number, and health insurance provider information. Victoria will take a picture of the child and the parents and attach them to the records. A \$50 non-refundable registration fee is also due with the completed application.

2.3 Daily checking in and out of children. SLA is open Monday through Friday from 6:30am to 5:30pm. Parents, guardians, or other authorized persons may check in and out a child using the sign-in sheet located in

each classroom. At the end of the day, Victoria collects the sign-in sheets and places them in a binder in her office. See Figure 1 for an example of the sign-in sheet.

2.4 Caretaker scheduling. Another significant part of Victoria's job is to make sure that she hires the best possible caretakers for SLA. She also works with scheduling the caretakers so SLA has sufficient coverage throughout the operating hours each day.

2.5 Daily checking in and out of caretakers. Caretakers at SLA must check in at one of the three computer kiosks located at the building entrance. After choosing the option to check in as an employee, the computer will print out a sticker name tag for the day. Each caretaker must wear the name tag while they are at work. Caretakers must also check out at the kiosk at the end of the day. The check in and out process also serves as a timesheet for payroll purposes, with this information being copied to the spreadsheet software program.

2.6 Maintaining and updating the children's information

2.6.1 Basic information. Conforming to the State law, SLA maintains up-to-date information about each child. Victoria and full-time employees have access to children's basic information including phone numbers of parents/guardians and emergency contact information.

2.6.2 Once a year, SLA will ask parents/guardians to verify that the children's information is up-to-date. Parents/guardians of each child will receive a formal letter with a form containing the child's information. Parents/guardians are asked to make changes to the information on the form or confirm that the information is accurate before submitting it back to the office within ten days. In addition, SLA requests an annual updated immunization records for each child. The information may be faxed directly from a child's pediatrician to the SLA office.

- 2.6.3 Every three months, SLA evaluates each child to see if he/she is ready, both physically and intellectually, to move to the next room. If so and if there is a space in the next room (i.e., moving from the 12-15 month room to the 15-18 month room), Victoria will write a letter to inform the child's parents/guardians about the move. The letter contains the date when the child will move to the new class, information about the new teacher, changes in curriculum (if any), and the new weekly tuition rate if any). The class roster will also be updated accordingly.
- 2.6.4 List of people authorized for pickup. In addition to parents and guardians, SLA maintains a list, with pictures, of people authorized to pick up each child. A person can be added to a child's authorized pick up list only when he/she is initially presented with parents/guardians. Pictures of the authorized pick up person must also be taken and kept on file in the office for verification purposes.
- 2.6.5 Processing tuition and fee payment. Table 1 summarizes a fee structure at SLA. Detailed information for the fee is provided below.

| Tuition and Fee description | Amount |
|--|--------|
| One time Non-refundable registration fee | \$50 |
| Weekly Tuition for Infant Rooms | \$160 |
| Weekly Tuition for 1-year old Rooms | \$143 |
| Weekly Tuition for 2-year old Rooms | \$130 |
| Weekly Tuition for 3-year old Rooms | \$117 |
| Weekly Tuition for 4-5 year old Rooms | \$115 |
| Weekly Tuition for K-5th Grade | \$100 |

Table 1 SLA fee structure

- 2.6.6 Initial registration fee. Once a child has been accepted at SLA, a one-time \$50 non-refundable registration fee is due along with a complete application. Parents can pay the

registration fee by cash, check, or credit card.

- 2.6.7 Weekly fee. The primary source of revenue for SLA is from weekly tuition. Currently, tuition payments are accepted only by either cash or check. Victoria is interested in adding an option to allow parents to pay online with a credit card. However, she is not sure how to get started with this process.
- 2.6.8 Late pickup fee. Children must be picked up by their parents, guardians, or previously authorized persons before 5:30pm. If the children are not picked up by 5:30pm, a late pickup fee of \$20 per child per hour (fraction of an hour is considered one full hour) will be charged to the account. More than three late pick up in one month will result in a warning to parents.
- 2.7 **Recording child incident.** Conforming to the State law, SLA is required to maintain records of each child's illnesses, accidents, injuries, signs of abuse, etc. The detailed incident information must include the child's name, date of birth, date and time of the incident, type of the incident (accident, illness, etc.), description of the incident, injuries (if any), description of medical services or treatment provided (if any), date and time the parent/guardian was notified about the incident, witnesses of the incident, and name of the caretaker. Currently, Victoria uses a paper form to record each incident. The original copy of the form is kept in a binder in the office, one copy is placed in the child's personal folder, and another copy is given to the parents. An example of the incident report is provided in Figure 2. (also see Section 4.10)

3. DESIRED SYSTEM FEATURES AND OUTCOMES

Victoria would like to spend less time processing paperwork and more time managing her business. Currently, she had to obtain data from the paper forms and reentered it into a spreadsheet software in order to generate a report, even if it is a simple report such as a list of children attending class each day.

Victoria has set aside a budget for these purposes. She would like to be able to electronically record child attendance and easily retrieve information for planning and scheduling caretakers. She would also like the new system to be able to generate the following reports:

- 3.1 **Waiting list report.** Victoria would like to keep an electronic record of children in the SLA waiting list organized by age and when the child was placed on the list.
- 3.2 **Child information.** Per State Law, SLA must maintain accurate information of each child. Victoria would like the tasks of keeping accurate records to be as easy as possible. The system should allow Victoria to view and update information and pictures for each child. She would also like to be able to view the overall records for all active children enrolling at SLA. This feature would be very useful in such situations as looking up which children do not have an immunization record on file. Victoria would like to keep records of every child enrolled at SLA, whether the enrollment is active or not.
- 3.3 **Guardian Information.** Similar to the child's information, Victoria would like to maintain accurate information for the parents/guardians of each child. She wants to be able to view information about all children under each guardian as well as all guardians for each child. Again, Victoria would like to keep records of all the parents/guardians whether they have a child currently enrolled at SLA.
- 3.4 **Child reference report.** This feature would be useful for caretakers to quickly locate basic information about each child. The reference report for each child should include such information as parent/guardian names and phone numbers, emergency contacts, medical information, and name and pictures of authorized pick up persons.
- 3.5 **Birthdays report.** This report lists birthdays of children currently enrolled at SLA as well as birthdays by classroom.
- 3.6 **Class roster.** Victoria would like to be able to view the SLA roster overall (i.e., a list of children currently enrolled at SLA) as well as individual class rosters (i.e., a list of child assigned to each classroom). Ideally, the printed individual class roster should include

the classroom number, teacher name(s), child names and the total number of children scheduled to be in a class. In addition, the reports should include checkboxes for attendance, a place to record the number of breakfast, lunch, and afternoon snacks requested for each class.

- 3.7 **Attendance reports.** Based on the check-in and check-out data, Victoria would like to be able to view the list of children currently attending SLA at any particular moment as well as the current attendance for each classroom. In addition, the system should be able to create a comprehensive report summarizing attendance hours for each child every week.
- 3.8 **Receipt for fee payments.** The system should be able to generate receipts for each of the payments SLA receives.
- 3.9 **Event reminders.** Victoria would like to receive an automatic reminder report at the beginning of each day. Examples of reminders include upcoming children's birthdays, upcoming activities (field trips, emergency drills, etc.), upcoming child progress evaluations (see Section 3.6.3), upcoming due dates for child immunizations, account information needed to be updated, and accounts that are currently past due.
- 3.10 **Child incident reports.** An incident report currently in use is provided in Figure 2. Victoria would like the new system to be able to generate a similar report that can be accessed from each child's record. She also would like to be able to create a monthly report summarizing all incidents by classroom, age group, and SLA overall.
- 3.11 **Caretaker Information.** Victoria would like to keep records of all employees at SLA although they are no longer actively working at SLA.

4. CONCLUSION

Victoria needs your help. Her business at Smile Land Academy has been successful. However, as her business (and profits) has grown, so have the demands on her time due to a number of different issues related to record-keeping and reporting. Not surprisingly, her spreadsheet software program and hard copies of other documents is no longer an efficient or effective

way to manage her data. Victoria's hope is that you can help Smile Land Academy with her desired database needs.

**SMILE LAND ACADEMY
DAILY SIGN IN SHEET**

Classroom _____ Date: _____

Caretaker _____

| Child's Name | Sign In | | Sign Out | | Comments |
|---------------------|---------|-----------|----------|-----------|----------|
| | Time | Signature | Time | Signature | |
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| Total Count: | | | | | |

Figure 1 Sign in sheet

| SMILE LAND ACADEMY INCIDENT REPORT | |
|---|--|
| *This form may be used to maintain a record of each child's illnesses, accidents, injuries, signs of abuse, etc. *Provide a completed copy to parents. | |
| Name of Child _____ DOB: _____ | |
| Details of Incident | |
| Date / / | Type _____ <small>(Accident, illness, etc.)</small> |
| Time _____ <input type="checkbox"/> Am <input type="checkbox"/> Pm | Place _____ <small>(Kitchen, Playground, etc.)</small> |
| Describe Incident: _____ _____ _____ | |
| Injuries: _____ _____ _____ | |
| Describe Medical Services or Treatment Provided _____ _____ _____ | |
| Parent/Guardian/Other Notified | |
| Name _____ | Date / / Time _____ <input type="checkbox"/> Am <input type="checkbox"/> Pm |
| Name _____ | Date / / Time _____ <input type="checkbox"/> Am <input type="checkbox"/> Pm |
| Witnesses | |
| Name _____ | |
| Name _____ | |
| Staff _____ Date / / | |
| <small>(Print Name)</small> | |
| Staff Signature: _____ Date / / | |

Figure 2 Incident Report