

LEVERAGING AI IN SALESFORCE TO ENHANCE EDUCATIONAL PLATFORMS

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Abstract. *This study explores the application of AI in Salesforce for enhancing educational platforms. Salesforce's AI capabilities, particularly Einstein, have transformed student interactions, optimized administrative processes, and provided personalized learning experiences. Educational institutions can leverage these tools to improve student engagement, streamline operations, and identify at-risk students through predictive analytics and automation. The findings demonstrate the impact of AI in supporting both students and academic staff in a modern digital education environment.*

Key words: Artificial Intelligence (AI), Salesforce, Education, Personalized Learning, Predictive Analytics, Student Engagement.

Introduction

Artificial intelligence (AI) is increasingly being adopted across various sectors, and education is no exception. Various aspects of the use of AI in education are explored in the literature [1, 2]. The potential of AI and its capacity to replace or assist human teachers is discussed in [3]. Paper [4] studies the impact of AI on the teacher and student relations. Authors of [5] examine the university students' perceptions of generative AI in education. A model for leveraging GenAI tools, for individualized, formative, peer-simulated feedback in graduate-level courses in higher education is presented in [6]. Pedagogical, theoretical, and methodological perspectives of AI in education are presented in [7]. Another no less important aspect is the application of AI systems in student activities and educational management. These systems can successfully provide educational services such as personalized real-time student feedback and handle administrative tasks previously managed by faculty members [1, 2, 8].

In the sphere of the emerging digital platform economy, companies such as Amazon, Google, Salesforce, and Uber are creating cloud-based structures that enable a wide range of human activities [9]. With the advent of AI-driven technologies, educational institutions are finding innovative ways to personalize learning, streamline administrative tasks, and

engage students more effectively. Salesforce, a leading Customer Relationship Management (CRM) platform, offers AI capabilities through Salesforce Einstein, which is transforming how educational institutions operate [10]. The main goal of this study is to explore the application of AI within Salesforce for education. It focuses on the key areas where AI can significantly improve both student experiences and institutional efficiency, including automating student interactions, predicting student performance, personalizing learning paths, and more. Author's practical examples for specific applications in the Salesforce Einstein environment are developed.

Salesforce features

Salesforce and its education cloud are widely used in educational institutions. These are designed for managing student records, admissions processes, alumni engagement and communications. With the integration of AI tools, particularly Salesforce Einstein, the platform extends its capabilities to automate routine tasks, provide personalized student services, and generate actionable insights from data. Salesforce's features provide tools for managing student recruitment and admissions, monitoring retention rates, and facilitating student success [11]. The key features of salesforce Einstein GPT are:

- Natural language processing (NLP) and interaction with the user according to his individual needs.
- Personalized insights – By using deep learning, Einstein GPT interprets past behavioral and contextual data to offers relevant recommendations.
- Automation and scalability – Ability to automate repetitive routine tasks and workflows based on understanding the context of the data.
- Data scalability – Provides scaling and parallel processing of interconnected large volumes of data.

Application of AI in Salesforce for educational needs

We introduce three practical examples of the Salesforce ecosystem. They present an example project for working in an academic environment with the help of AI. These examples include the following educational services:

1. Automating Student Interactions: AI-powered chatbots, such as Einstein Bots, can handle routine student inquiries, like course registration, financial aid, and campus services;
2. Predictive Analytics for Student Performance: AI tools can identify at-risk students and enable staff to intervene early with personalized support;
3. Personalized Learning Paths: AI analyzes student data to recommend customized learning experiences, helping students progress at their own pace.

Expanded Example 1: Einstein Bot for Automating Student Interactions

Einstein Bots in Salesforce enable educational institutions to automate responses to frequent queries, improving the efficiency of student interactions.

Detailed Setup for Einstein Bot:

1. **Create a Bot in Salesforce:** Navigate to **Einstein Bots** under Service Setup. Choose a bot template or create one from scratch.
2. **Configure Intents and Utterances:** Define intents that match student queries. These include: Course Registration: Handles requests like “I want to register for a course.”; Financial Aid: Helps students check their financial aid status with utterances like “Check financial aid” or “My financial aid status.”.
3. **Use Context Variables:** Capture and store information such as student ID, course details, or program of study to personalize responses.
4. **Integrate with Salesforce Data:** Use Lightning Flows to fetch data directly from Salesforce objects like student records and present dynamic responses.

Expanded Einstein Bot Configuration Example:

```
{ "version": "1.0",  
  "botName": "Student Support Bot",  
  "greeting": "Hi! I'm here to help you with student services.  
              How can I assist you today?",  
  "intents": [
```

```
{
  "name": "Course Registration",
  "utterances": [
    "Register for a course",
    "I want to sign up for a class",
    "course registration"  ],
  "response": "Sure! Please provide your
course name and ID.",
  "actions": [ {
    "type": "Flow",
    "name": "RegisterCourse",
    "inputs": {
      "courseId": "$UserInput.courseId" } } ] },
{
  "name": "Financial Aid Status",
  "utterances": [
    "Check financial aid",
    "financial aid status",
    "my financial aid"
  ],
  "response": "Let me pull up your financial aid status.
Please enter your student ID.",
  "actions": [
    {
      "type": "Flow",
      "name": "CheckFinancialAid",
      "inputs": { "studentId":
"$UserInput.studentId" } } ] ] } }
```

In this example: The bot uses Lightning Flows for both course registration and financial aid checks by retrieving data based on the user's input. Context variables like `$UserInput.courseId` allow the bot to interact with Salesforce data to execute actions.

Expanded Example 2: Predictive Analytics for Student Performance

Salesforce Einstein Prediction Builder helps use machine learning models to predict student outcomes, such as dropout risks or academic success. Institutions can act on these insights to provide targeted support.

Step-by-Step Guide for Building a Predictive Model:

1. **Select the Outcome:** Define the target outcome, such as predicting whether a student will drop out.
2. **Choose the Data:** Select relevant data points like attendance, GPA, number of completed assignments, participation in extracurricular activities, and more.
3. **Train the Model:** Analyze the data and create a predictive model.
4. **Set Prediction Scores:** The model will produce a score for each student, indicating the likelihood of them dropping out.
5. **Deploy the Model:** Once trained, the predictions can be integrated into workflows, sending alerts to academic advisors if a student exceeds a dropout risk threshold.

Expanded Example for Predictive Analytics Code:

```
public class StudentDropoutPredictor {
    public void predictDropoutForStudents(
        List<String> studentIds) {
        for (String studentId : studentIds) {
            Integer dropoutRisk = getDropoutRisk(studentId);
            if (dropoutRisk > 75) {
                notifyAdvisor(studentId, dropoutRisk); } } }
    // Mock function that calls Einstein Prediction API
    // to get the risk score
    private Integer getDropoutRisk(String studentId) {
        // In a real scenario, integrate with
        // Salesforce Einstein Prediction API
        return (Integer)(Math.random() * 100);
    // Random score for example purposes
    }
    // Notify advisor if the student's dropout risk is high
    private void notifyAdvisor(String studentId,
        Integer riskScore) {
        String advisorEmail = getAdvisorEmail(studentId);
        System.debug('Sending alert to advisor: '
+ advisorEmail + ' for student: '
```

```
+ studentId + ' with risk score: ' + riskScore); }  
// Mock function to get advisor's email  
private String getAdvisorEmail(String studentId)  
{  
    return 'advisor@university.edu'; // Mock email  
} }
```

The `predictDropoutForStudents` method uses Einstein predictions to get dropout risk scores for a list of students. If a student's risk score exceeds a threshold (e.g., 75%), the system alerts their academic advisor. Table 1 illustrates how Einstein Prediction Builder could be used to generate dropout risk scores for students, along with recommended interventions and assigned advisors. This hypothetical dataset demonstrates the system's ability to prioritize at-risk students effectively.

Table 1. Predictive analytics for leverage student performance

Student ID	Dropout Risk, %	Intervention Recommended	Advisor Assigned
A001	85%	Advisor Meeting	Dr. Smith
A002	65%	Academic Support	Dr. Jones
A003	40%	Group Tutoring	Dr. White
A004	20%	No Intervention Required	N/A
A005	90%	Immediate Parent Conference	Dr. Green

Expanded Example 3: Personalized Learning Paths

Salesforce's Einstein Recommendation Builder can suggest personalized learning resources for students based on their academic performance, course preferences, and study habits. Here's an expanded version of how you could use Einstein to build personalized learning journeys.

Steps for Creating a Personalized Learning Experience:

- 1. Analyze Student Data:** Collect data on student performance in subjects (e.g., grades, completion times, feedback).
- 2. Define Learning Rules:** Set rules based on the data – e.g., if a student scores above 80% in math, recommend advanced math courses.
- 3. Create Dynamic Recommendations:** Use Einstein to dynamically generate recommendations for each student based on their learning path.

Expanded Example for Personalized Learning Paths Code:

```

public class PersonalizedLearningPath {
    public List<String> recommendCourses(String studentId) {
        List<String> recommendedCourses = new List<String>();
        Integer mathScore = getSubjectScore(studentId, 'Math');
        Integer scienceScore = getSubjectScore(studentId,
            'Science');
        if (mathScore > 85) {
            recommendedCourses.add('Advanced Algebra');
            recommendedCourses.add('Calculus II');
        } else {
            recommendedCourses.add('Algebra I'); }
        if (scienceScore > 85) {
            recommendedCourses.add('Physics 101');
            recommendedCourses.add('Chemistry Basics');
        } else {
            recommendedCourses.add('Introduction to Science');
        }
        return recommendedCourses; }
    // Placeholder function to fetch
// the student's subject score
    private Integer getSubjectScore(
        String studentId, String subject) {
        // Example: Fetching from student database
        return (Integer)(Math.random() * 100);
// Mock score
    } }

```

Table 2. AI-generated recommendations

Student ID	Math Score	Recommended Math Course	Science Score	Recommended Science Course
S101	92	Advanced Calculus	78	Physics II
S102	80	Calculus I	70	General Chemistry
S103	65	Algebra II	88	Molecular Biology

This example shows how to use AI-powered recommendations to provide personalized learning paths. Based on student performance in specific subjects, the system suggests appropriate courses (e.g., advanced courses

for high performers). Table 2 shows how AI-generated recommendations can guide students toward tailored educational resources based on their academic performance in math and science.

Enhancing administrative processes

AI also improves the efficiency of administrative tasks in educational institutions. From automating admissions to optimizing student recruitment, Salesforce’s AI-driven tools can help to reduce manual work and improve decision-making through predictive analytics [2]. Expanded Enhancing administrative processes Example:

```
public class AdmissionsAutomation {
    public void processApplication(String applicationId) {
        String essayContent = getApplicationEssay(applicationId);
        Integer essayScore = evaluateEssay(essayContent);
        updateApplicationStatus(applicationId, essayScore); }
    private String getApplicationEssay(String applicationId){
        // Fetch the essay content from
        // the student application record
        return 'This is a sample essay
content for NLP processing.'; }
    private Integer evaluateEssay(String content) {
        // Placeholder logic for NLP-based evaluation
        // In practice, integrate with Einstein NLP API
        if (content.contains('innovative')) return 90;
        return 70; }
    private void updateApplicationStatus(String applicationId,
        Integer score) {
        if (score > 80) {
System.debug('Application approved for '
                + applicationId); }
    else {
System.debug('Application under review for '
                + applicationId); } } }
```

Table 3 compares manual and automated workflows for typical administrative tasks in educational institutions, showcasing the potential efficiency gains achieved through AI-driven automation.

Table 3. Enhancing administrative processes

Task	Time (manual)	Time (Automated)	Improvement, %
Application Processing	5 days	2 hours	96%
Financial Aid Documentation	3 days	1 hour	97%
Transcript Requests	2 days	30 minutes	98%
Enrollment Status Updates	1 day	15 minutes	99%
Enrollment Status Updates	1 day	15 minutes	99%
Scholarship Approvals	4 days	3 hours	94%

Conclusion

This study contributes to the field of AI in education by exploring how Salesforce's AI-driven tools can address critical challenges faced by educational institutions. By presenting practical examples, this paper demonstrates actionable approaches to automating student interactions, improving retention through predictive analytics, and personalizing learning experiences. Additionally, it examines how AI can optimize administrative processes like admissions and recruitment, providing a blueprint for integrating AI into institutional workflows. These findings position Salesforce as a transformative platform for education, paving the way for further research into its applications and impact.

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