|  |  |
| --- | --- |
| **Big Data Develops at Pearson** | Abstract  This idea adopts the idea of ​​creating a systematic automated system of big data and Pearson Education standards. Two-thirds of previous studies and researches have shown that the use of large-scale data in teaching outcomes and learning outcomes. The aim of the project is to increase teacher effectiveness and student experiences through big data data and technology integration. Through the important stakeholders, it explains that raising the level of education requires effective analysis, and students tend to get more comprehensive and inclusive education. The study also emphasizes the importance of keeping up with our guests from new opportunities in the age of digital learning in order to enhance innovation in the Pearson Education sector.  Yazan, Atary , Rawan Baniyounes  **Cloud Computing Research Project** |

**Index**

[Big Data Develops at Pearson 4](#_Toc156765408)

[Introduction: 4](#_Toc156765409)

[Literary reviews: 4](#_Toc156765409)

[Summary: 5](#_Toc156765410)

[Research Objectives: 5](#_Toc156765411)

[methodologies 6](#_Toc156765412)

[The data 10](#_Toc156765416)

[present research outcomes 15](#_Toc156765417)

[reviewer: 16](#_Toc156765418)

[SELF REFLECTION ON THE PROCESS 18](#_Toc156765421)

**1.Build a research proposal that outlines the research objectives related to proposing an automated system to produce a list of suggested courses for each Pearson student based on the student's performance during the study trip. The research proposal should clearly define the research objectives.**

# Big Data Develops at Pearson

# Introduction:

To develop an automated system to enhance the quality of education at Pearson using big data, it is essential to understand the current landscape of big data in education and its potential applications. Big data in education is a new relative phenomenon, with research mainly focusing on using data to improve the quality of education and research. Big data provides an opportunity for educational institutions to strategically use their technological resources to improve the quality of education and guide students towards higher completion rates and improved outcomes. (Daniel ، 2017) (Mathur، 2020) (Murumba، 2017)

Big data analytics can contribute to the formulation of evidence-based policies and practices that enhance the quality of education, especially in developing countries. Automatic text evaluation based on language models has the opportunity to reduce the time and effort spent on manual evaluation and improve the objectivity of the evaluation process. Educational technology is an effective way to use technologies as tools and media for the transmission of educational materials, which can significantly improve performance and learning experiences. (ABTEW ، 2023) (Wu، 2022)(Machmud، 2021)

The development of education today has changed in parallel with technological progress, and the use of multimedia and multimedia technology has the potential to create simulated interactive information spaces, which enhances the quality of education. Digitization in education is fundamental in the modern university space and is linked to the digital economy, which cannot be achieved without the digitization of education. (Malik ، 2012) (Wang، 2019) (Kotlyarova، 2021)  
  
Literary reviews:

Insights from the current literature suggest that big data has a profound impact on education, giving companies like Pearson the opportunity to develop an automated course recommendation system that leverages the wealth of available data. This system can significantly enhance the personalization of education, adapting it to the unique needs of each student. The focus on harnessing big data underscores the potential of this technology not only to improve the quality of education but also to personalize it according to individual student performance analytics. This approach coincides with the dynamic evolution of educational technologies, showing promise in meeting the widespread learning needs of the digital age.

(Daniel, 2017) (Machmud, 2021).

In the context of higher education, big data offers opportunities to strategically improve the quality of education and guide students, suggesting that universities promote analytics and should invest in analytics programs and cadres to leverage relevant scientific data. This highlights the growing recognition of the potential of big data to enhance education quality and outcomes.(Murumba, 2017) (Munshi, 2021)

The literature emphasizes the importance of teacher quality in influencing student achievement, supporting the need for policy interventions aimed at improving teacher quality and providing opportunities for professional development. This highlights the importance of considering the competence and skills of the teacher in developing an automated system to improve the quality of education. (Ambussaidi, 2019)

In terms of practical applications, big data has been used to develop a method for monitoring and managing the quality of educational programs using software tools, showing that big data can be used to improve the quality of education. The use of big data technology has been proposed to create a dynamic assessment model for online university education, with the aim of increasing the advantage of big data in traditional methods and improving the quality of education. (Logachev, 2022) (Zhang, 2022)

Through cloud computing and big data, education, especially at institutions like Pearson, is poised to significantly enhance quality and efficiency. This technological integration supports the efficient management and processing of large amounts of data through cloud-based solutions, which are flexible and cost-effective. The article also addresses the challenges and future possibilities of employing cloud computing in educational environments. Pearson's opportunity to leverage these technologies to analyze and improve student learning experiences and outcomes. The ultimate goal is to create an automated and personalized learning system based on big data analysis.(Singh, 2018)

# Summary:

This research adopts the vision of developing an automated system aimed at improving the quality of education at Pearson using big data. Based on the literature and previous research, it appears that leveraging big data in education has a positive impact on learning quality and teaching improvement. Research deals with the integration of technology and big data to improve the student experience and enhance teacher competence. Based on the goals set, it appears that improving the quality of education depends on effectively analyzing data and adopting an automated system that provides more interactive and inclusive learning experiences. The research also points to the importance of following technological developments and exploiting emerging opportunities in the digital learning era to promote positive transformation in Pearson's education.

# Research Objectives:

**This research aims to answer the following questions:**

1- Can the quality of education be improved using big data?

2 - Can the big data framework improve the assessment of educational performance?

3 - How can Pearson develop an automated system for personalized course recommendations using student academic data?

4 - How can big data analytics effectively enhance the quality of Pearson cloud computing courses?

# methodologies 2

**. Explore what qualitative, quantitative and mixed research are, and at least three data collection methods (Data Mining, Interview, Survey, etc.), and then justify the general choice of these methods.**

# The three basic methodologies are qualitative, quantitative and mixed:

**Qualitative Research:** This approach is often exploratory and aims to understand human behavior, beliefs, and attitudes. It's more about "why" and "how" decision-making, not just "what," "where," and "when." Qualitative approaches include interviews (structured, semi-structured, or unstructured), focus groups, observational studies, and case studies. This approach is useful for obtaining detailed insights and understanding the reasons behind certain behaviors or phenomena.

**Quantitative Research:** This method focuses on measuring data and circulating the results from the sample to the concerned population. It involves measurable data to formulate facts and reveal patterns in research. Quantitative data collection methods include surveys, questionnaires, experiments with control and experimental groups, and statistical analysis. This approach is effective in providing a broad overview and establishing relationships between variables.

**Mixed Methods Research**: Mixed methods research combines qualitative and quantitative research elements. It is an integrative approach that allows for a more comprehensive analysis by addressing the limitations of using either method separately. For example, it can use qualitative data to provide context for quantitative results or vice versa. Hybrid search methods can be especially useful in complex research scenarios where numerical data and detailed understanding are required.

# When considering data collection methods:

**Data Mining:** This involves extracting useful information from large sets of data. It's particularly relevant for big data applications, where analyzing patterns and trends from a vast amount of student performance data can provide insights into custom course recommendations.

**Interviews and Surveys:** Can be used to collect qualitative and quantitative data respectively on student experiences, preferences, and outcomes in different courses. This information can complement the results of data mining by providing additional context and user feedback.

**Observational Studies:** Observational methods may be less directly applicable, but they can be used to collect accurate data about student behaviors and interactions in learning settings, which can be valuable for understanding the impact of course recommendations.

In this paper, the methodologies chosen align with the objective of understanding the detailed behavior and preferences of students regarding their academic performance. The hybrid approach is particularly useful for this study. It enables comprehensive analysis by integrating extensive data analysis (through data mining) with in-depth insights gathered from interviews and surveys. This combination is powerful for understanding the multifaceted aspects of student performance and preferences, as it integrates the breadth of quantitative data with the depth of qualitative data. Thus, the blended approach is effective in providing a comprehensive understanding of the educational context and student needs, which is vital to developing a robust automated system for Pearson's course recommendations.

* **Identify and define the methodology you will use in your project, then explain and justify the suitability of the chosen methodology to your research needs.**

In this research project, the methodology chosen is the mixed methods approach, which effectively combines qualitative and quantitative research methods. This decision is fully consistent with the project's need to understand complex phenomena such as student behavior, academic performance, and preferences in the context of educational data.

# Mixed Methods Research approaches are chosen for several main reasons:

**Comprehensiveness:** This project requires an understanding of digital data (e.g., scores and performance metrics) and personal experiences (e.g., student feedback and preferences). The mixed-method approach allows for comprehensive analysis by integrating the statistical power of quantitative data with the rich contextual insights provided by qualitative data.

**Enhanced Validity:** With both qualitative and quantitative data, search results gain improved validity. When quantitative data shows trends and patterns in student performance, qualitative data provides depth and understanding of these patterns, ensuring a more robust interpretation of the data.

**Flexibility and Adaptability:** Mixed methods are inherently flexible, allowing research to adapt as it progresses. This is particularly useful in education research, where initial quantitative results may lead to new qualitative queries, or unexpected qualitative results may be explored through quantitative methods.

**Targeted Recommendations: The goal of the** project is to develop an automated system of course recommendations. To achieve this, it is necessary to understand not only students' statistical performance (quantitative), but also their learning needs and individual preferences (qualitative). The mixed-approach approach enables the creation of more targeted and personalized recommendations.

**Data Triangulation:** This approach allows for data triangulation, which means that the same phenomenon can be examined from multiple perspectives. This triangulation enhances the reliability and accuracy of the search results.

The integration of data mining techniques (quantitative method) with interviews and surveys (qualitative methods) is particularly suitable for this project. Data mining will provide insight into broader trends and patterns in student performance, while interviews and surveys will provide a deeper understanding of student experiences and needs. This combination ensures that course recommendations are not only data-driven, but also tailored to each student's unique needs.

The blended approach is ideal for this project as it allows a thorough understanding of students' academic performance and behavior, which is essential to developing an effective automated course recommendation system.

(Scribbr, n.d.) (Sheppard, 2019)

**. After analyzing the data, use your analysis to make a judgment and evaluate post-experiment taking into account various factors of the nature of the research to justify and support the choice of your research method.**

After thorough data analysis and critical evaluation of different research methodologies, my opinion is to use a mixed-method research approach for a comprehensive understanding of students' academic performance. This choice is supported by the following rationales:

**Data Analysis Insights:**

Data shows different levels of academic performance across different courses and semesters. The use of qualitative and quantitative data is critical in revealing not only the statistical representation of grades but also the personal experiences, preferences, and challenges faced by students.

**Methodological Justification:**

**Qualitative aspect:**

Qualitative data from interviews and surveys provide accurate insights into factors that influence student performance, such as study habits, teaching quality, and personal circumstances. This depth of understanding is critical to the development of interpersonal interventions.

**Quantitative aspect:**

Quantitative analysis, including data mining techniques, allows for the identification of patterns and trends within large data sets. This helps in generalizing the results and understanding the broader effects of student performance measures.

**Benefits of Mixed Methods:**

**Comprehensive analysis:**

The combination of quantitative data and qualitative insights ensures a more holistic view of the research problem, capturing the macro and micro dimensions of student performance.

**Validate the results:**

The hybrid approach enables cross-verification where qualitative insights can explain the "why" behind the quantitative "what", thereby increasing the credibility of the results.

**Flexibility in research:**

This approach provides the flexibility to adapt research design to the emergence of new insights, which is especially useful when dealing with complex human behaviors and preferences.

**Targeted educational recommendations:**

To develop an automated system of course recommendations in Pearson, it is essential to understand individual learning paths. The hybrid approach facilitates this by providing a way to design recommendations based on performance data and personal feedback from students.

**Data triangulation:**

The use of multiple methods to investigate research questions allows for the triangulation of data, thus enhancing the validity and reliability of research results.

Through critical assessment and choice of a multi-method approach, I develop my research to obtain more comprehensive, accurate, and actionable insights into students' academic performance, closely aligned with the goals of improving learning outcomes and enhancing the quality of education at Pearson.

(Scribbr, n.d.) (Sheppard, 2019)

# The data 3

* **Provide qualitative secondary data from the attached "Higher Nationals for the Computing Specification" file to provide detailed learning outcomes for your Pearson materials.**

**qualitative secondary data**

|  |  |  |
| --- | --- | --- |
| Material | Learning Outcomes | Code Number |
| Cloud fundamentals | "Study the fundamentals of cloud computing in relation to the areas of application architecture and platform." | 1 |
| Cloud fundamentals | "Design a deployment model to be hosted in the cloud for a specific scenario." | 2 |
| Cloud fundamentals | "Explain the different approaches for cloud service providers (CSPs) to provide a framework for cloud architecture for commercial use." | 3 |
| Cloud fundamentals | "Assess the technical challenges and risks inherent in moving IT systems to the cloud." | 4 |
| Programming | "Define the underlying algorithms for executing a process and outline the application programming process" | 5 |
| Programming | "Explanation of the characteristics of object-oriented and event-oriented procedural programming" | 6 |
| Programming | "Executing basic algorithms in code using IDE" | 7 |
| Programming | "Defining the debugging process and explaining the importance of the coding standard" | 5 |
| Networking in the cloud | "Study the principles of common networks used in cloud infrastructure to support communications." | 6 |
| Networking in the cloud | "Explain the operation of network technologies within cloud infrastructure." | 6 |
| Networking in the cloud | "Optimizing network performance for a cloud-based system developed for a specific business use case." | 2 |
| Deploying and operating in the cloud | "Discuss cloud architectural principles used to design a technology solution for the organizational transition to the cloud" | 1,3 |
| Deploying and operating in the cloud | "Develop a cloud-based prototype using a development methodology suitable for the business case" | 4,7 |
| Deploying and operating in the cloud | "Prototype solution testing against business case requirements" | 5 |
| Deploying and operating in the cloud | "Discuss the value gained from developing a cloud-based solution to support sustainable organizational performance." | 3,4 |
| Professional practice | "Demonstrate a set of interpersonal communication skills that are transferable to the target audience" | 8 |
| Professional practice | "Apply critical thinking and reasoning to a range of problem-solving scenarios" | 8 |
| Professional practice | "Discuss the importance and dynamism of teamwork and its impact on team work in different environments" | 8 |
| Professional practice | "Examine the need for continuing professional development (CPD) and its role within the workplace and for learning at a higher level" | 8 |

table 1

|  |  |
| --- | --- |
| symbols | figure |
| Principles of Cloud Computing | 1 |
| Cloud service and deployment | 2 |
| Cloud strategy and management | 3 |
| Development & Programming | 4 |
| Quality Assurance and Standards | 5 |
| Networking and performance | 6 |
| Professional Skills | 7 |
| Professional development and lifelong learning | 8 |

table 2

|  |  |  |
| --- | --- | --- |
| figure | Topics | Code numbers |
| 1 | Cloud computing concepts | 1 |
| 2 | Cloud & Strategy Services | 23, |
| 3 | Software Development | 4 |
| 4 | Quality Assurance | 5 |
| 5 | Cloud Networks | 6 |
| 6 | Professional Development | 7,8 |

table 3

Table 4

|  |  |
| --- | --- |
| figure | Description of themes |
| 1 | Principles and infrastructure for cloud technology, with a focus on virtualization, cloud models, and infrastructure. |
| 2 | Strategic selection and management of cloud services, including cloud deployment planning and alignment with business objectives. |
| 3 | The process of designing, coding, and implementing software applications using different programming models and tools. |
| 4 | Ensure that software meets quality standards through systematic testing, error correction, and adherence to coding agreements. |
| 5 | Connect within cloud infrastructures, with a focus on principles, technologies, and performance optimization. |
| 6 | Enhance skills and continuous learning, including communication, teamwork and professional growth strategies. |

table 4

|  |  |
| --- | --- |
| figure | Suggested solutions |
| 1 | [Introduction to Cloud Computing on AWS for Beginners [2024] | Udemy](https://www.udemy.com/course/introduction-to-cloud-computing-on-amazon-aws-for-beginners/) |
| 2 | [IICS: Informatica Intelligent Cloud Services Training | Udemy](https://www.udemy.com/course/iics-informatica-intelligent-cloud-services-training/) |
| 3 | [Introduction to Programming and Dev - 2 Hour Crash Course | Udemy](https://www.udemy.com/course/programmingintro/) |
| 4 | [The Complete Quality Assurance Course- Learn QA from Scratch | Udemy](https://www.udemy.com/course/the-complete-quality-assurance/) |
| 5 | [AWS Networking Masterclass - Amazon VPC & Hybrid Cloud 2024 | Udemy](https://www.udemy.com/course/aws-networking-amazon-vpc-aws-vpn-hybrid-cloud/) |
| 6 | [SOFT SKILLS: Most Crucial Career Success Soft Skills! | Udemy](https://www.udemy.com/course/soft-skills-most-crucial-career-success-soft-skills/) |

table 5

* **Perform quantitative primary research to collect the required scores for your search from previous "summative assignments feedbacks" files. Demonstrate the required cost and ethical issues encountered during the "primary and secondary" data collection of your research.**

**quantitative primary research**

|  |  |  |  |
| --- | --- | --- | --- |
| Classrooms | Material | Tag in BTEC | Percentage |
| The first | Principles of Cloud Computing | P | 73 |
| Second | Networks in the cloud | P | 76 |
| Second | Programming | P | 80 |
| Summer | Professional and ethical practices | P | 71 |
| Summer | Installation and management in cloud computing | P | 60 |

table 6

|  |  |
| --- | --- |
|  |  |
| Total | 360 |
| Average | 72 |
| GPA | 4.0/1.166 |

table 7

illustration 1

# **present research outcomes 4**

* **Show how you will inform the target beneficiaries of your research of your research results within the conclusion.**

**Beneficiaries of my research are specific and are expected to benefit directly from the study's findings and recommendations. These include:**

**Department of Cloud Computing:** Pearson's academic department that focuses on cloud computing. They can use the research to improve curriculum design, teaching methodologies, and student support services based on insights into student performance and preferences.

**Education technologists:** Those responsible for developing and implementing instructional technologies at Pearson will find research valuable in creating or improving automated systems for student course recommendations.

**Students majoring in cloud computing:** They can benefit from enhanced learning experiences tailored to their performance and feedback, which can lead to better learning outcomes.

**Instructional designers:** Professionals who design course content and learning experiences can use research to customize learning materials according to the specific needs of cloud computing students.

* **Provide a critical analysis of research findings and inform target stakeholders of credible and justified recommendations as a proposed solution to the challenges they face within the proposed solution part.**

**Key search results:**

The core of my research is to develop an automated recommendation system specifically designed for Pearson's cloud computing students. This system will be informed through a deep analysis of quantitative and qualitative data, not only performance measures but also individual learning preferences and needs of students. The aim is to enhance their academic journey by providing customized course recommendations that align with their unique educational paths, thereby improving engagement and success rates.

|  |  |
| --- | --- |
| figure | Suggested solutions |
| 1 | [Introduction to Cloud Computing on AWS for Beginners [2024] | Udemy](https://www.udemy.com/course/introduction-to-cloud-computing-on-amazon-aws-for-beginners/) |
| 2 | [IICS: Informatica Intelligent Cloud Services Training | Udemy](https://www.udemy.com/course/iics-informatica-intelligent-cloud-services-training/) |
| 3 | [Introduction to Programming and Dev - 2 Hour Crash Course | Udemy](https://www.udemy.com/course/programmingintro/) |
| 4 | [The Complete Quality Assurance Course- Learn QA from Scratch | Udemy](https://www.udemy.com/course/the-complete-quality-assurance/) |
| 5 | [AWS Networking Masterclass - Amazon VPC & Hybrid Cloud 2024 | Udemy](https://www.udemy.com/course/aws-networking-amazon-vpc-aws-vpn-hybrid-cloud/) |
| 6 | [SOFT SKILLS: Most Crucial Career Success Soft Skills! | Udemy](https://www.udemy.com/course/soft-skills-most-crucial-career-success-soft-skills/) |

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# Reviewer:

**proposal**

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THE DATA



<https://www.udemy.com/>

# SELF REFLECTION ON THE PROCESS 5

* **Assess how effectively your research methods are applied in achieving research objectives.**

### In assessing the success of my research techniques in achieving the objectives of the study:

**Enhancing the quality of education:** I discovered that my research strategies were effective in obtaining information and understanding about how big data can improve education. A solid foundation for understanding potential improvements was created through case studies examination and literary analysis.

**Improving educational performance assessment:** One of the most important ways in which big data can be used to improve educational performance evaluation is through the use of data analysis tools. In this sense, examining statistics on student performance has proven useful.

**Automated Recommendation System for Courses: I** used a strong data analysis foundation to support my proposal for an automated system that provides personalized course suggestions. I was able to develop a proposal for a system that could successfully design learning experiences by looking at students' academic data.

**Improving the quality of the cloud computing cycle:** By combining qualitative and quantitative research methods, it was possible to demonstrate how big data analytics can improve Pearson's cloud computing cycles and provide practical suggestions on how to make changes.

Overall, my methods matched the goals impressively and provided a comprehensive understanding of the application of big data in educational environments.

* **Based on your personal thinking, discuss alternative research methodologies and experience gained.**

### In discussing different research methods and considering the knowledge gained:

**As an alternative to the grading-based system:** Quizzes or quizzes may be used to measure students' understanding of course materials rather than relying solely on grades, which are not always reliable measures of a student's abilities. This method can provide a more accurate assessment of their abilities and knowledge.

**Conduct experiments**: Conducting controlled experiments with students may be a useful alternative to collecting data from current grades or performance metrics. Students may be exposed to various teaching strategies or study materials in these experiments, and their performance and feedback may provide first-hand knowledge of the effectiveness of different teaching methods, and you can give the student suggested solutions depending on their actual level.

* **Based on lessons learned, suggest future improvements and research considerations, and then show how you recommend these actions based on your personal experience.**

### To suggest future improvements and research considerations:

**Improving data collection techniques:** Accurate and comprehensive data can be obtained through improved data collection techniques. Greater awareness of students' needs and learning can be obtained, for example, by incorporating a wider range of student performance measures and feedback systems.

**Use more advanced data analytics techniques:** Applying machine learning algorithms or more sophisticated statistical techniques may provide deeper data insights, possibly revealing previously hidden trends and patterns.

**Continuous feedback loop:** By establishing a system that enables teachers and students to provide ongoing feedback, instructional tactics can be improved and dynamically revised in response to real-time data.

**Rationale:** These improvements can help address any limitations you encounter in initial research. Improved data collection and analysis methods can provide more reliable and in-depth insights, while the broader scope of research and ongoing feedback can ensure that research remains relevant and effective in real-world educational environments.

# Steps to prepare the research methodology:

At first, when I received the research order, I did not face any difficulties, but it took a lot of my time in the first section of the research, and I finished submitting it, and then I quit working on the research for a week or two. When I came back I had some difficulties in completing the second part, the problem was not in its difficulty, I did not have enough information to solve this section, but I came up with some new information in order to expand my memory and facilitate the answer. When she got to the third section, which is information analysis, she was

Information about my grades during my studies. I had difficulties and it took up a lot of my time. I wasn't able to figure out what to do and how. Then I understood what was needed and analyzed all the data. It took a long time and I did that and completed the analysis of all the data and information, and then I moved to the branch after it, and it did not take much time, almost a few hours, and the last branch was not tired or difficult because it talks about myself and how my journey was in searching and adding some ideas.

During the first phase of my research, I felt easy and efficient, as I did not face major difficulties and was able to complete the first section quickly. But after taking a break for a week or two, I faced some challenges in resuming and completing the second part. This was not due to the complexity of the task, but because of the lack of sufficient information, which initially caused frustration. When I applied to the third section, which included analyzing my grades, I felt confused and uncertain, as it was time-consuming and initially unclear. Once I understood what was needed, I felt more confident and was able to complete the data analysis. Later sections, being less demanding and more personal, brought feelings of satisfaction and achievement.

**Evaluation of my research experience:**

The effectiveness of my research strategies in enhancing the quality of education through big data has been a great success. The use of case studies and literature review provided deep insights into potential improvements.

In improving educational performance assessment, the application of data analysis tools to student performance statistics has been particularly productive, providing valuable insights.

Developing a proposal for an automated course recommendation system, supported by robust data analysis, was a major achievement, demonstrating my ability to create practical solutions based on academic data.

The combination of qualitative and quantitative methods has proven effective in suggesting improvements to Pearson's cloud computing courses.

**Challenges:**

Initially, I faced some obstacles in gathering sufficient information for certain parts of the research, which required adjusting my approach and looking for additional resources.

The data analysis phase, especially analyzing my score, was time-consuming and confusing at first, challenging in terms of time management and trend clarity.

**The research experience was highly educational, with successes outweighing challenges and providing a comprehensive understanding of the role of big data in education.**

**Think about alternative research methodologies and consider what could help in similar future situations:**

**Implementation of tests and tests:** Incorporating quizzes or quizzes designed to directly assess students' understanding of course materials would provide a more accurate measurement of their abilities. This approach can help in situations where grade-based systems cannot accurately reflect students' competencies.

**Conducting disciplined experiments:** Using disciplined experiments to gather first-hand knowledge about the effectiveness of different teaching methods would be invaluable. This approach allows monitoring of students' actual performance under different learning conditions, providing more direct and reliable data.

For future similar situations, the use of these methods, along with models or tools such as statistical analysis software or educational feedback systems, could provide more robust and insightful data. This enhances the ability to make informed decisions and provide personalized learning solutions.

By reflecting on my research and the ideas gained, for future projects, I would like to incorporate a more diverse approach to data collection to gain a thorough understanding of students' needs. Advanced data analytics techniques, especially sophisticated machine learning algorithms, will be used to reveal deeper insights from data. Creating an ongoing feedback loop with both teachers and students will also be a key focus, allowing real-time adjustments in instructional strategies. This approach aims to address any shortcomings of previous research, ensure more reliable and in-depth insights and maintain the relevance and effectiveness of research in actual learning environments. To avoid past negative results, these improvements will focus on enhancing data reliability and responsiveness to ongoing feedback, and fostering a more positive and effective research experience.

**In conclusion:**

After thinking a lot about my research, I realized how important it is to modify and develop methods in order to better achieve our educational goals. I realized how important it was to use a variety of data collection methodologies in order to fully understand children's complex requirements. Deep insights can now be derived in new ways thanks to the use of sophisticated machine learning algorithms and other advanced data analytics techniques. These ideas provide windows to learn about the diverse experiences, difficulties and goals of our students – they are more than just digital data points.Creating a dynamic feedback loop between teachers and students will be a key element of my upcoming research projects. This interactive method will promote a more responsive and inclusive learning environment as well as enable real-time adjustments in pedagogical tactics.

My goal is to create a system in which feedback is a key element to foster continuous development rather than an afterthought.This improved methodology overcomes the shortcomings of previous studies, ensuring that our findings are not only more accurate and comprehensive, but also relevant and useful in actual educational contexts. My dedication is to foster a research model that is academically rigorous and empathetic and aligned with the requirements of our academic community. I will do this by emphasizing ongoing feedback and enhancing data reliability. Lessons learned from the past are more than just reflections; they provide the foundation for a future in which the practice and research of education are closely intertwined and serve to achieve the common goal of improving the educational experience for every student.

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