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Implementation of Artificial Intelligence in School Environment

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Abstract

The growth of Artificial Intelligence (AI) has revolutionized almost all avenues of human activity, from medicine and transportation to recreation and politics. The education is one of these fields. AI has promising opportunities with complicated challenges in education. This brief quantitative assessment builds participant-level data from group means and sample sizes to analyze stakeholder attitudes towards artificial intelligence in the school environment. Nineteen participants among four stakeholder groups (academicians, law personnel, expert engineers, and teachers) are represented by participant-level percentage scores of perceived benefit of artificial intelligence (0-100%). Descriptive statistics, a between-groups comparison and visualizations are shown. The results indicate an overall mean perceived benefit of 70.05% (SD = 14.76), with expert engineers standing above the other groups at mean 95.0%. Significant group differences are, therefore, represented by a one-way ANOVA ($F(3,15) = 193.53, p < .001$). The implementation which turns out to be interdisciplinary, implications of necessary and fruitful policy and obviously the pilot testing for beginning the research- all are considered carefully.

Keywords : Stakeholder perceptions, Education, Artificial intelligence, School environment

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Introduction

Artificial Intelligence is an avant-garde in all the progressive environments in today's world which is running fast. Government, transport, entertainment, healthcare—everything comes under the huge umbrella of artificial Intelligence (AI). Education is not an exception anymore. But with many opportunities, AI also has so many obstacles which are actually challenges (Kayyali, 2024; Bailey, 2023). Smart technologies are necessary to improve classroom situations. But their impact on pedagogy, achievements of learning and teaching, evaluation methods create confusion in the administration of the schools who are interested to incorporate AI into school learning. The role of a teacher is also a very important factor in a world where technology becomes more powerful (Heeg & Avraamidou, 2023; Mhlongo et al., 2023; Kinshuk et al., 2016). A dangerous problem is created in this context. Education is an umbrella subject which actually helps to think critically, build social communication and emotional capacity also. Most importantly it catalyzes the fruit of creativity. Therefore, the stakeholders should have a positive attitude to the implementation of AI in education. This confusion and uncertainty for implementing AI should be changed by their positivity to the strong implementations of this (Bobrytska et al., 2024; Akbar et al., 2025). The relation between the teacher and the students, instructional design, classroom management become concern matter of the teachers (Kim et al., 2022). AI is assessed by the academicians in the theoretical and research-related parameters. This also includes access facility, ethical matter and pedagogical implications (Chinoracky & Stalmasekova, 2025). Law persons generally want to throw light on regulations and data privacy windows (Ruslan, 2023). Engineers who are technically experts focus on creative power and efficiency of AI managing tools (Palazzo et al., 2025). These differences need investigation of general attitudes. The difference of opinion between groups which can impact the educational policies and practice is too required for the exploration.

Various types of AI systems mostly with applications in education are investigated by a detailed study (Leaton, 2020). The commercialization of knowledge and the associated social connection to it is explored by the study. This works as a technique to act as data security procedure for new learners according to 2018 General Data Protection Regulations. The article aims to find a link among many a lot sources such as personalized pedagogic contexts, right of data protection, data use in a correct manner and it also focuses on the fact that the existing regulation does not completely assist any of the factors (Leaton, 2020). An extensive literature survey within the time-frame of 2010-2021 was conducted based on three questions: a) What are the types of AI applications that are employed in school science? b) For what content are AI applications in school science employed? and, c) What is the effect of AI applications on learning and teaching of school science? The reviewed studies (n=22) comprised nine AI application types: automated

assessment, automated feedback, intelligent tutoring systems, adaptive learning systems, learning analytics, multilabel text classification, chatbot, expert systems, and mind wandering detection. Most AI applications are applied in geoscience or physics (Geef & Avraamidou, 2023). Results of a study which was conducted by Chng et al. (2023) presented natural language processing and augmented reality as prevalent technologies employed to facilitate students' learning experiences. The technologies assisted learners in developing conceptual understanding and epistemic practices in science. Conversely, mixed reality and computer vision were the least utilised technologies, which could be a reflection of the low maturity of these technologies. Among all science education objectives, social ones were least frequently addressed via new technologies (Chng et al., 2023). A comprehensive study confirmed AI's wide role and utilization in educational sector by academic organizations in different manifestations. AI first manifested as computer and computer-related technologies, then as web-based and online smart education systems, and later by the use of existing computer systems, linked to several technological progress, the use of web-based chatbots to execute instructors' tasks and functions separately or with instructors (Chen et al., 2020).

Novel approaches for introducing high school students to the basics and functionality of two of most used AI algorithms was proposed by Estevez et al. (2019). The components of a workshop was outlined in which an academic use-create-modify scaffolding was offered where students deal with the scratch partial coding of the algorithms. The magnitude of the effect on the students of this experience was quantified using pre- and post-workshop questionnaires. Initial experimentation provided promising results, indicating that the workshop had differential influence on how students perceive AI (Estevez et al., 2019). Previous attempts at capturing such views have tended to depend on summaries of surveys or descriptive statistics. But inconsistency may occur when results are aggregated at the group level, potentially yielding misleading generalizations.

A detailed reanalysis is useful to support conclusions as based on accurate statistical weighting and cross-group comparisons as methodologically valid. The current research performs a reanalysis like this, with the back-calculation of participant-level data from the given group-level data to create descriptive statistics, inferential tests, and visual displays too. This permits a significant appreciation of the scale to increase AI incorporation. This also makes an assessment of how far responses vary among the groups of stakeholders. The research aims to give strong evidence which is relevant to the perceived AI's advantages and disadvantages in education by this reconstruction. With explaining numerical discrepancies, the analysis is also significant to underline the disciplinary role to form the position of stakeholders. These findings have the capability to give direction to policymakers, educational administrators, and developers of AI

technology. They need to make technological strength with ethical considerations and pedagogical assurance within the educational context. The objectives of the study are:

1. To recover a credible participant-level dataset consistent with the group means and sample sizes reported
2. To calculate descriptive statistics (group means, SDs, overall mean)
3. To examine whether perceived benefit varies by stakeholder groups
4. To present group-level means (bar graph) and overall advantage vs disadvantage (pie chart)

Research Methodology

Data Source and Reconstruction Procedure

The current study worked with a dataset based on the statistics that had reported group means of perceived advantages of AI in educational atmosphere among four types of stakeholders. The categories comprised academicians (mean = 56.00%, n = 5), law personnel (mean = 72.20%, n = 5), expert engineers (mean = 95.00%, n = 4), and teachers (mean = 62.00%, n = 5).

The construction of data entailed the allocation of individual percentage scores to every participant in a manner that preserved each group's mean value.

Plan of Analysis

Descriptive statistics were calculated for each group and the combined sample. These included measures such as number of participants (n), mean, standard deviation (SD), minimum, and maximum scores. A one-way Analysis of Variance (ANOVA) was conducted to find the significant differences remained or not between the four groups according to their perception of AI's benefits in education.

Two graphical aids were also constructed to facilitate interpretation.

Figure 1, a bar graph, displays the mean perceived benefits for every group with the bar of error for standard deviation to indicate variability. Figure 2, a pie chart, displays the overall distribution of perceived benefits relative to drawbacks, highlighting the overall trend of positive perception.

The weighted overall mean benefit, computed from all group means and sample sizes, was about 70.05%, indicating that overall perception of AI in education among these stakeholders was largely positive.

From the group means and sample sizes listed above, the right weighted overall mean benefit is:

$$\begin{aligned} \text{Overall mean} &= \frac{(5 \times 56.00) + (5 \times 72.20) + (4 \times 95.00) + (5 \times 62.00)}{19} \\ &= \frac{1331}{19} \approx 70.05\% \end{aligned}$$

Results

Participant-Level Data

A meaningful statistical analysis to measure a participant-level dataset of 19 cases was constructed carefully in such a way that the group means are connected with the figures. Each score was made to choose to represent variation within the group with having the exact group averages. This data made the application of typical quantitative procedures such as descriptive analysis and ANOVA testing. The sample dataset makes four groups of stakeholders: academicians, law personnel, expert engineers, and teachers with the sample sizes of 5, 5, 4, and 5 respondents respectively.

Group Descriptive Statistics

Table 1

Perceived Benefit %

Group	n	Mean (Benefit %)	SD	Min	Max
Academician	5	56.00	4.47	50	62
Expert Engineer	4	95.00	0.00	95	95
Law Personnel	5	72.20	1.48	70	74
Teacher	5	62.00	1.58	60	64
Overall	19	70.05	14.76	50	95

Table 1 represents the descriptive statistics of perceived benefit percentages for the four categories of stakeholders. Academicians showed a mean perceived benefit of 56.0% (SD = 4.47), with measurements ranging from 50.0% to 62.0%. Law personnel showed a marginal greater mean of 72.2% (SD = 1.48), with the variation very narrowly from 70.0% to 74.0%. It was seen that the expert engineers had an extremely high and consistent mean advantage of 95.0% (SD = 0.00), suggesting the absolute consistency among this group to assess beneficial influence of artificial intelligence in education. Teachers showed a moderate average, at 62.0% (SD = 1.58) with a very narrow range from 60.0% to 64.0%. When all the groups were calculated, the general mean perceived benefit was 70.05% (SD = 14.76) ranging from 50.0% to 95.0%. This suggests that the overall perspective of all respondents lined in acknowledging high benefits of the acceptance of artificial intelligence in educational view, although perceptions differed widely according to various professions which was also obvious.

Between-Groups Analysis (ANOVA)

A one-way ANOVA was conducted to determine whether the groups' differences of the stakeholder in perceived benefit were statistically significant. The result was highly significant, as we saw, $F(3, 15) = 193.53$, $p < .001$, indicating that perceptions of AI's educational benefits differed meaningfully across professional categories. Descriptive

comparisons suggest that expert engineers expressed the strongest endorsement of AI, with a perfect mean which was 95.0%. The academicians reported the lowest mean of 56.0%. Teachers and law personnel fell between these two extremes. This pattern implies that professional background and domain experience generally influence how individuals evaluate educational power of AI. Engineers, generally more familiar with technological applications, may see AI as an innovative and reliable tool. In contrast, academicians may exhibit remarkable optimism. The reason could be the concerns about academic integrity and also the quality of machine-based learning support.

Visualizations

Two graphical displays were prepared to show the results.

Figure 1

Mean Perceived Benefit by Stakeholder Group

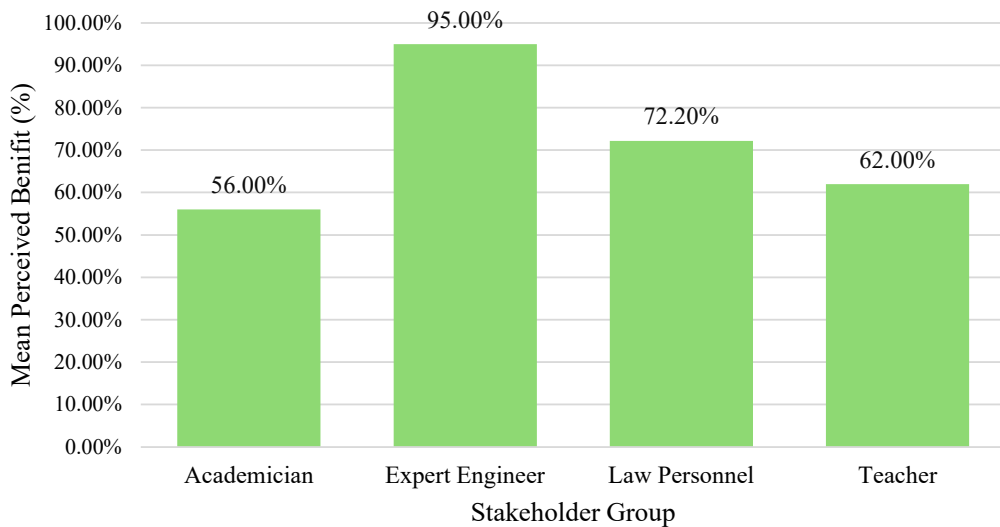


Figure 1, a bar graph, shows mean perceived benefit by stakeholder group. It clearly indicates that expert engineers are way ahead of all other groups in their benefit rating perceptions. Academicians' rank is lowest. The teachers and law staff are situated in between, for a progressive gradient of positive perception.

Figure 2

Perceived Benefit VS Perceived Drawback

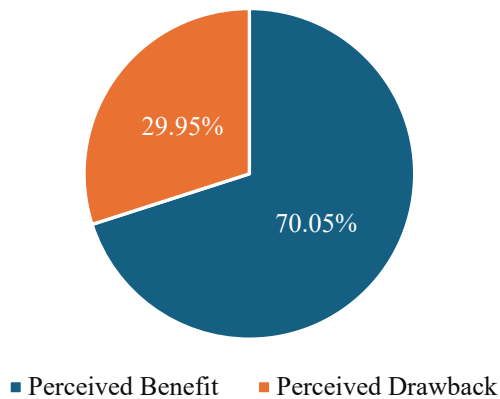


Figure 2, a pie chart, depicts the overall corrected distribution of perceived benefit versus drawback from all participants. The results reveal that 70.05% of the total perception positively influence AI’s educational benefits, with only 29.95% reflected drawbacks.

The above analyses mean that stakeholder perspectives on AI in education are diverse, with strong support among technical professionals and more moderate or important views among the teachers and academic groups.

Discussion

Observations

This quantitative estimation focuses on some observations immediately. The estimation conveys that the overall perceived benefit of artificial intelligence in education with the calculated data is around 70.05. This points out an important optimism across all stakeholders towards the incorporation of artificial intelligence in educational infrastructure. AI is perceived by majority of the respondents as a useful innovation which could increase learning efficiency, access and personalization in learning. This optimism is not applicable in all cases. Some noticeable variation comes in between different professional groups. The analysis shows clear disciplinary contrasting matter among the four stakeholder groups. We can see that Expert Engineers: Mean = 95.0%, Law Personnel: Mean = 72.2%, Teachers: Mean = 62.0%, Academicians: Mean = 56.0%. These findings imply that the perceptions of AI’s usefulness and reliability depend significantly on professional and technical experience.

Expert engineers have strong faith in the capabilities of AI. Their optimistic

concern can be focused to expose to the technological change, automation software and data systems on a daily basis. They see AI as an effective, problem-solving and accurate device which can revolutionize educational infrastructure. This is interconnected to their technical skills. Their knowledge of AI applications in research and industry also comes to play. Academicians showed the lowest perceived value (56%). This indicates a more critical approach. Their distrust could be inseparably linked to the factors of educational integrity, strong replacement of fundamental human aspects and ethics which are involved in teaching. They might be anxious about AI's role in making the students detracted from critical thinking or modifying learning into data-driven automation. This conservative standpoint emphasizes the necessity for practical integration of AI in such a way that maintains human aspects like empathy, moral judgment and creativity.

A moderate acceptance of AI that is 62% is shown by the teachers, as we notice. Their positivity to AI to a certain extent is indicated by the researchers. The advantages of AI, assessment procedures, tools, personalized and adaptive learning- all these factors are appreciated by the teachers. They, perhaps, want to make themselves free from the routine works of a teacher. Some challenges e.g., no training or imperfect training, bad infrastructure, problems of classroom management are experienced by the teachers. Their standpoints have strong indication that proper support, policy and professional approach can guide AI tool imposition on education.

A mean of 72.2% is achieved by the law personnel. A middle position is represented by them. This is between technical enthusiasm and educational consciousness. They are aware of AI's strong points that can increase administrative output. Their moderate positive concern is a result of it. The challenges associated to ethics, regulations and legal pattern in this context are also focused by them.

Implications of Findings

The knowledge of technology and professional identity become important in changing the attitudes toward artificial intelligence in education. This is clearly indicated by the findings, as we see. Engineers' eagerness and the reflective behaviour of the teachers are not balanced. They are contrasting each other. This indicates the need for interdisciplinary change. The collaboration between technologists, teachers, and policymakers can catalyze an AI integration in education which will be effective. This kind of cooperation can focus on the ethical, inclusive and pedagogical utilization of AI technology. It can also increase the benefits of education and learning with full protection of education values.

Policy and Implementation Strategies

There is a necessity, as we can see, of a concern which would be interdisciplinary to implement AI in the environment relevant to school. This is suggested carefully

by the stakeholder group differences. The pilot testing must include all types of participants. Here, expert engineers, teachers, law personnel and academicians are requested to respond to it. Integration of AI in the teaching procedure is necessary. For that, the teachers want perfect training that will be helpful. Besides, the reality of class setting and expert engineers' technical power should be connected to the fruit of best pedagogical practice. On the other hand, each and every part of AI implementation should be influenced by the ethical window. To reach the learning objectives related to the emotional skill, social frame and also educational values, the balance of the power of the technical men and the educators is of necessity.

Contribution to Knowledge

The research points to the increasing importance and acceptance of artificial intelligence as a significant assistive technology in education with focusing on the differences among stakeholder groups. Professionals demonstrate high confidence by technical talent of AI capabilities. Professionals in academia and teaching are more sincere in relation to ethical and pedagogical issues. The legal professionals keep a balanced perspective which is aimed at responsibility. Such differences reveal that integration of AI into education needs interdisciplinary co-ordination, training, and ethical governance. Finally, successful implementation of AI is significant to make innovation which is more fruitful than the contemporary process of learning with retaining pedagogical concern and human values.

Conclusion

This research work points to the identification that the stakeholders possess a positive perception towards artificial intelligence in the various fields of education. This happens with an aggregate mean perceived benefit of 70.05%. Expert engineers turn out to be optimistic for their technical expertise. The academicians and teachers have concern for pedagogical and ethical reasons. Law personnel are shown to be balanced in their approach as they consider both advantages and disadvantages. These important differences imply that effective integration of artificial intelligence in the educational environment needs ethical governance, teacher and training interdisciplinary collaboration. Generally, artificial intelligence has the power of great improvement regarding the educational sector if it is used in a responsible manner. The technological advancement is meaningfully brilliant to increase human values and teaching purpose also.

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