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**RESEARCH PAPER**

## Learning Experiences and Practices through Artificial Intelligence as Adoptive Academia for Teachers and Students of Higher Education Institutions of Pakistan

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**ABSTRACT**

The study investigates the learning experiences and practices of teachers and students in higher education institutions in Pakistan through Artificial Intelligence (AI). Employing qualitative research method, the study utilizes narrative and phenomenological designs to collect study data from various sources, including interviews and documents. Initial data collection involves 20 participants through semi-structured interviews, while 50 documents such as reports, AI blogs, and research articles, reports are later analyzed. The findings suggest that artificial Intelligence AI significantly transforms the educational landscape, making it more accessible, efficient, and accurate. It influences various disciplines and industries, including business, engineering, and manufacturing. AI in Education (AIED) offers valuable resources, problem-solving tools, and automated grading systems. It streamlines instructional delivery, monitoring, assessment, and diagnostic processes, enhancing the overall educational experience for both teachers and students in higher education institutions. AI facilitates automatic operations, enabling virtual access to learning activities and practices, thereby revolutionizing traditional teaching methods.

**KEYWORDS**    Academia, Adoptive, Artificial Intelligence, Learning Experiences and Practices

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**Introduction**

Advancements of emerging technology including artificial intelligence develops juncture of academia and effectively and efficiently empowers and equips with infinite source of knowledge and information. Artificial intelligence AI recommends cognitive reformation, extreme reasoning and innate competency for problem solving in diverse disciples of life such as medicines, science and technology, education and research and engineering and technology. AI transforms teaching and learning perspectives of education and facilitates bulk access of knowledge and information and converts the spiral hub of virtual learning. AI reforms the innovative instructional techniques and indicates intellectual responses of individual such as individual characteristics, performance, and personal and professional development which incorporate the real life experiences of learner (Cui, et al., 2022). Artificial intelligence reforms and redesigns human intelligence and learning aspects and encourages the fascinating educational setting through nest of digital resources. Technology oriented innovation in education makes the accurate and faster learning paths and develops technical ways of exploration of information related to

teaching learning perspectives. AI tools and services have driven the rapid educational developments and experienced generally in all the fields of standardized life particularly in the education sector (Aslam, 2023). Artificial Intelligence AI broadly facilitates the modern and technical modes of pedagogy and andragogy furthermore it facilitates the modern tools and techniques for teaching learning such as Chat GPT, Bing, AI Wizard, You chat, AI Query, Waldo and YEP. AI search applications have provided wider and infinite access to information website and learning corridor through Google, YouTube and other search engines. Most of the higher education institution across the World extract and utilize the services of AI linkage websites and applications for teaching learning operation and provides access of those spiral webs to teachers and students. HEIs provide intensive utilization of AI services in teaching learning activities, curriculum formation and assessment and evaluation and research and development. Institutions provide professional training and skills development for the educators and students for the appropriate use of AI nests. HEIs facilitate off campus, dial-in, video conference through leveraging technology (Chen, 2020). AI-supported and adaptive learning junction leverages technology intelligence of human being and transforms learning experiences of an individual and invokes professional skills and problem solving capacity related to career and professional competencies for virtual platforms (Pedro, 2019).

## **Literature Review**

### **Artificial Intelligence**

Artificial intelligence deals with a machine wisdom and technological behavior which execute the several operations in limited pace of time, it works with human intelligence and maximize the quality and accuracy of work in easier and faster ways of overall development in education and corporate sectors (Rajarman, 2014). Development of technology seems a magnificent revolution of day to day operations in several fields such as law and security, business and commerce and manufacturing industry. Technology replaced manual operations of mankind and developed the excellent design of machine operation known as Artificial Intelligence (AI) which is based on machine performance. It is a system that mimics operation of human efforts with foster and accurate pace. Artificial Intelligence reflects a significant effect on manufacturing industry, medicine and healthcare and supply chains etc. AI performance is more authentic and improvement in performance and productivity. Although human intelligence is integrated and seemed handicapped without human contribution, machine reasoning depends upon the organization of command, guidance and instructing and human orders (KARTHIKEYAN, 2021). Advancement of technology has generated applications and software which understands and translates human instruction and perform any tasks easily and accurately through wireless communication such Facebook, Gmail, twitter and Instagram.

### **Components of Artificial Intelligence (AI)**

Revolution of AI brought numerous improvements in operations and routine tasks for business and market and education and research through applied logics. AI is based on multiple operation oriented components

### **Cognitive Computing & Deep Learning**

Artificial Intelligence AI has transformed the traditional mechanism machine operations which are commonly based on machine cognition and manufactures the computer based instruction into meaningful tasks (Snow et, AI, 2017). AI level of construction and metacognition is hundred times accurate and faster than human

intelligence and capacity of work is much better than common capacity of individual. AI is developed by human intelligence for ease and comforts in routine tasks in verities of departments such as agriculture, business, accountancy and audit. AI designs the instructions and makes quick responses through the applied cognition of machine (Roll, 2016).

### Computer Vision and Machine Learning

Computer manifests the fastest and most accurate programing through the understanding the human instructions. Computer oriented machine can perform hundreds of function in real time application therefore computer machine is designed in such way to perform multiple operations in one and it difficult and almost for human impossible for human being to compete machine in execution of functions (Kornienko et al, 2015).

### Computer Programming and Language

Computer tools such as computer machine, processor and modem have enough capacity to accomplish the infinite calculation, graphics and animated visualization through programming applications which are based on computer languages such as C++, JAVA and VB; computer understands the command and accomplishes the operation within minimum real time consumption (Olsher, 2015).

### Computer Networking

Computer programs are integrated with networks which execute diverse services through server and it also provides local and wider access to personal computer to accomplish the desired outcomes of user through AI tools. AI is an opportunity to reduce the inaccuracy, errors and incompetence of human in certain functions. AI reflects an innovative strategy to help the human efforts and energy to mitigate the social and developmental complexities. AI supports to reduces and human doubts and develops vast the understanding of an individual about the uncertain situation and routine problems of life (Drobyazko, et al. 2019).

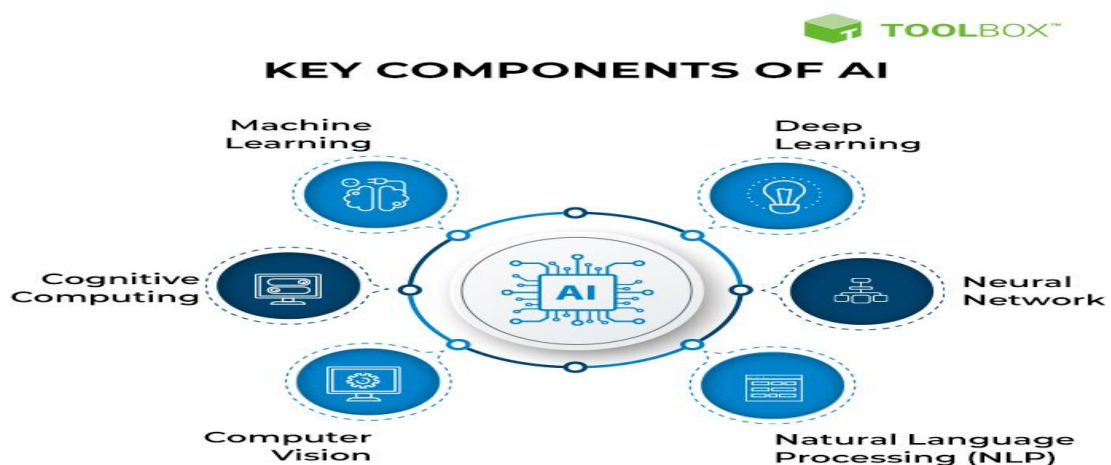


Figure 1 Components of Artificial Intelligence

## **Artificial Intelligence in Current Education**

Artificial Intelligence AI is an emerging and transformative approach for all operations such as medical science, engineering and development, business and marketing, AI largely academia and reflects real time survival of learners, unlike traditional approach, adaptive academia focuses special learning modes and strengthens the wide resources of learning material which optimize the learning need and demand of the 21<sup>st</sup> century competitive market. AI furnishes new and wider doors for human learning and provides maximum exploration of knowledge and information with easier and accurate pattern such as investigation of human and animal diseases and disorders, medicines & diagnostic access, architect and engineering design, AutoCAD, art and fashion and design, irrigation and cultivation techniques, project management and E marketing field. It provides largest networks of learning and sharing platform for global learners (Amjad et al., 2023)

## **Artificial Intelligence AI in Teaching Learning Process**

AI speeds up the learning activities and exploration of related queries for problems such as research and development, global trends and business marketing and technical skills. AI stimulates and engages learner and develops competitive learning environment for teachers and students. It transforms and improves the skills and abilities based on outcomes, enrich the academic and professional achievement of learner. AI develops critical thinking skills, problem-solving abilities and technical competencies of an individual and recommends better and feasible solutions of the problems (Kim, 2017). AI plays dynamic role to bridge up the gaps of modern learning and empowers the self-learning scope of individual. Additionally, it creates self-learning, self-guidance and self-assessment attitude and skills among students which encourage the learning habits and lifelong learning nature of an individual (Sumakul, 2022).

## **Artificial Intelligence AI Integrated Campuses**

Artificial Intelligence AI provides virtual stage for learner to enhance cognitive capabilities, adaptive behavior, sensors skills metacognition abilities, and creative competencies to enable them to solve the professional and life problems. AI helps to explore the knowledge resources or data mining, research and survey and exploration of resources. AI highly focuses the educational development such as formulation of curriculum, policy formulation mechanism, assessment and evaluation and innovative pedagogies which reforms the education perspective and brings modern trends in education and research. AI widely spread the virtual linkages with learning communities, technological experts, educational entrepreneurs, research development forums. Digital technology builds the networks of computer oriented learning which provides varieties of virtual programs and courses the online and distance learning services. Global renowned education institutions have developed digital infrastructure to provide off campuses service to cover the global scope of education. Cambridge and Greenwich and Yesbud universities have started online campus system and facilitate the diverse professional programs of study through online education. Institutions have appointed online tutors and are responsible to complete the credit hours for course work and research work. Online learning largely depends upon AI resources such as ChatGPT, You chat, Yandex and Bing which facilitate the reading material, visual graphics and conferences services with esteem scholars and consultants. AI For example, embedded robots and supporting equipment enable the creation of robots that improve the learning experience of the student from early childhood to higher education (Harun et al., 2022).

Artificial Intelligence AI is an emerging and transformative approach for all operations such as medical science, engineering and development, business and marketing, AI integrates socio economic discipline of life and converts in academia for real time survival of learners in modern World. AI unlike traditional approach, adaptive academia focuses special learning modes and strengthens the wide resources of learning material which optimize the learning need and demand of the 21<sup>st</sup> century competitive market. AI furnishes new and wider doors for human learning and provides maximum treasure of knowledge and information with easier and accurate pattern such as investigation of human and animal diseases and disorders, medicines & diagnostic access, architect and engineering design, AutoCAD, fashion and design, irrigation and cultivation techniques, project management and E marketing fields. AI provides largest networks of learning and sharing platforms for global learners (Amjad et al., 2023) AI speeds up the learning activities and exploration of related queries for problems such as research and development, global trends and business marketing and technical skills (Imran, et al., 2023). AI stimulates and engages learner and develops competitive learning environment for teachers and students. It transforms and improves the skills and abilities based on outcomes, enrich the academic and professional achievement of learner. AI develops critical thinking skills, problem-solving abilities and technical competencies of an individual and recommends better and feasible solutions of the problems (Park, 2017). AI plays dynamic role to bridge up the gaps of modern learning and empowers the self-learning scope of individual. Additionally, it creates self-learning, self-guidance and self-assessment attitude and skills among students which encourage the learning habits and lifelong learning nature of an individual (Ertmer, 2005).

### **Students and Teachers Engagement through Artificial Intelligence AI**

AI learning is an integral patty of education and scope of education through is widened and spread across the World. AI provide innovative apps and tools which facilities the easier and accurate sources of learning and problem solving almost in teaching learning perspective and research and development areas. AI implemented digital tools which helps the educator to assess the competencies and performance of an individual in meantime. AI trend is increasing in today's education and institutions have provided varieties of AIED facilities for teachers and students to modernize the teaching learning process such as access of network, access of SPSS, Turnitin and transcription app to record the information and convert it into meaningful context (Hussain, et al., 2023). AIED has developed the diagnostic and evaluation app which measure the gap and difficulties in individual performance. Furthermore, it provides vast sources of knowledge and information for teachers and students through internet apps and website which resolve the academic and non-academic problems of students like students upload and download the PPTs and PDF books, free research articles and research lab and digital libraries (Imran & Akhtar, 2023). AIED introduced the learning communities and collaborative learning approach where students and teachers ask questions and share their feedback on any problem, AI provide consultancy services for students if they feel and difficulties and problem they easily access the experts and scholar virtually and immediately resolve their problems. of the study. AI services and eliminated the issues and barriers of learning for teachers and students and provided open platforms to access the plenty of information resources and guidelines from the experts educators for the their related career and professional development (Amjad et al., 2023).

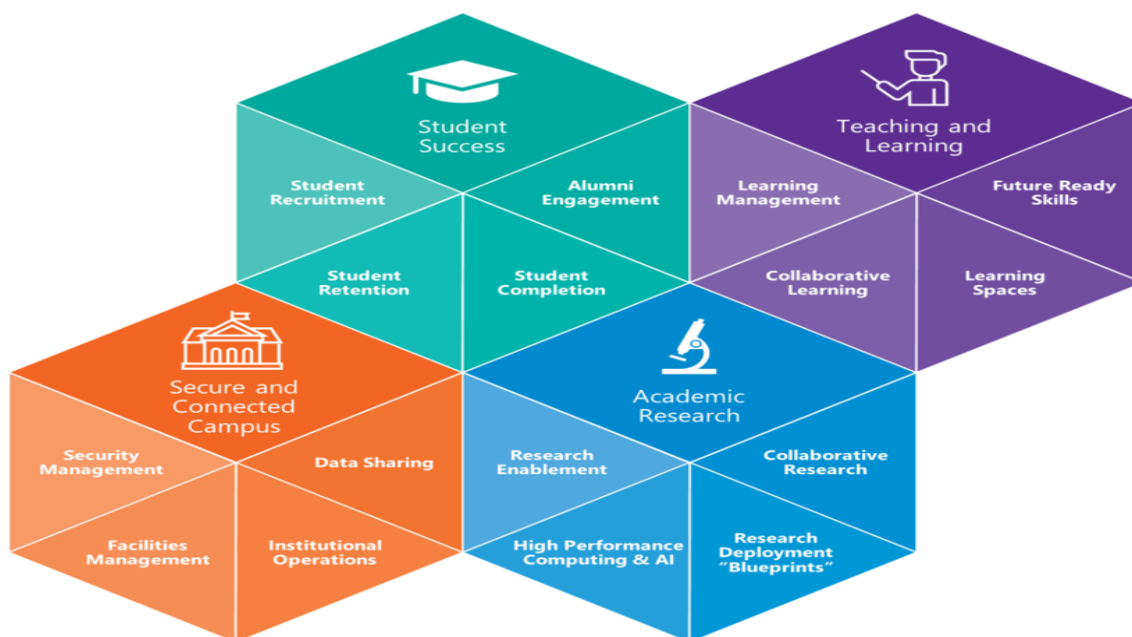


Figure NO. 2 Components of Artificial Intelligence

## Material and Methods

This study is qualitative study and conducted through narrative and phenomenological designs qualitative research largely reflects human understanding in diverse contexts and situations. It perfectly design that human perception is constantly changing with circumstance and unexpected events. Furthermore is requires minimum resources, time and energy to accomplish the research study (Patton, 2002). Data was collected through convenience and purposive sampling techniques through dual tools 1. Semi structured interviews and 2. Documents analysis. Data was collected from 20 participants (Teachers and Students of HEIs) and 50 research papers and reports were analyzed briefly about the learning experience through AI as an adoptive academia for teachers and students of higher education institutions of Pakistan

## Data Analysis

Data was collected through semi structured interviews and document analysis therefore codes and contents were prepared through collected data and prepared group codes then group codes were converted into themes.

## Results and Discussion

### Thematic Analysis

#### Artificial Intelligence AI Knowledge and Information Corridor

Participants perceived that an Artificial Intelligence AI is a wide and authentic source of knowledge and information through machine learning. It provides relevant information, reading material, related books and magazine which develops the cognitive stamina in learner to resolve issues and crisis of his life and career development. Articles, books and reports related to AI reflect a vast reserve of information about the various disciplines of learning such as medicines and bio science, agriculture and livestock,

business and commerce and art and calligraphy. AI develops and extracts related material about the problem from the scattered resources of information.

### **Artificial Intelligence AI Assistance in Problems Solving and Learning Complexities**

Participants believed that AI is faster and easier support for problem and complexities in teaching learning and research and development. AI provides best and suitable solutions for the problem and tries to remedy the learner. Participants believed that AI tools empower the teachers and students and enhance the teaching learning experience. AI motivates learner to be engagement with computer oriented instructions and quite helpful to fulfill the need of learner.

### **Artificial Intelligence AI Efficiency and Effectiveness in Quality of Work**

Participants perceived that AI facilitates the individual learner and institution through readymade learning material, videos, graphic designing and diagrams. AI applications chatGPT, Bing, Youchat, Wizard, Lena and ELSA provide wide access to users to ask quires related questions to any disciple of life. It is observed that AI improved the efficiency and effectiveness of work. It focuses the quality of work performance with faster and accurate pace.

### **Artificial Intelligence AI Knowledge Sharing Opportunity and Platform**

Participants perceived that Artificial Intelligence AI Specifically designed help the students in learning, it sophisticatedly assists collaborative tools and applications such as Google Docs and Google Sheets (Google, 2022), alongside it also offers for the organizations such as Tencent (Tencent, 2022) and facilitates social networking platforms through What Sapp (What's App, 2022) and WeChat (WeChat, 2022), and content sharing platforms such as YouTube (YouTube, 2022) and TikTok (TikTok, 2022) and many other AI tools. AI apps and tool were highly supported and helpful in COVID 19 lockdown and facilitated through virtual learning facilities through AI apps such Zoom, Microsoft Teams and Google classroom, lecturer were delivered, recorded, screen shared and group discussion services for teachers and students in order to compensate the teaching learning need in COVID 19 closure period.

### **Artificial Intelligence AI Based Teaching Method and Delivery of Instructions**

Participants perceived that AI delivers information, learning activities and quizzes for learners and engages with a particular activity, AI-assisted educational apps available in the leading app stores, SayHi automatically translate between languages, mathematics apps, Photomath (Photomath, 2022) which automatically calculate and solve equations. AI has developed games-based learning, VR, AR tools which are commercially available Virtual Reality (VR) and Augmented Reality (AR) digital games-based learning stimulates image recognition, neurosurgical residents on a variety of activities and generate skills to manipulate three-dimensional models. Teaching learning perspectives such as delivery of instructions, examinations, and tutoring are automated through AIED and virtual tutor gives special attention to each student, it notices students improve and current performance (Oad, & Alwi, 2021).

### **Artificial Intelligence AI Based Diagnose Learning Disabilities and Disorder**

It is analyzed that through AI reports and research papers that AI assists special children and diagnosis of learning disabilities among them like, as ADHD, dyslexia, and dysgraphia and utilizes the robotic education which stimulates the learning of special



children through text-to-speech apps, auto image captioning app. AI develops quick responses and quickly generates relevant paragraphs. AI generated tools Chabot assists the children and guides them in academics, examinations, IT and health management. AI supports learners in disabilities through automatic writing, Chabot's, automatic assessment, network orchestrators and dialogue oriented tutoring systems. AI helps through virtual teaching; it has developed auto generated response apps which automatically answer questions which are difficult for human wisdom to answer. AI provides automatic and accurate feedback such as correction in spell, grammar, sentence error, tenses and punctuation errors from the writing

### **Artificial Intelligence AI Assisted Open Tutoring and Smart Learning Partner**

It is observed through varieties of AI blogs and reports that AI system provides orchestrator AI systems and engages in learning, AI develops Open Tutor OT, mechanism of Smart Learning Partner for the learners researchers. OT app can be operated through all type mobile phone; app connects peoples, shares a list of tutors who provides guidance services for almost 20 minutes of one-on-one tuition and share screen and voice. Dialogue-based tutoring systems (DBTS) simulate the system of dialogue between user and machine through spoken, figurative and animated responses between teacher and students. It manifests to develop in-depth understanding for topic and questions. Learner step-by-step proceeds as in Socratic tutoring method through probing questions rather focus on answers ((Ali, Ahmad, & Sewani, 2022). DBTS provides guided response and stimulates to discover the solution of the problem, it discover the pre-specified solution for the current problem. Participants believed that AI technique of ELT encourage the learner to construct knowledge and discover the information about the problem and related research. This AI app provides automatic feedback, and reduces the complexities. AI highly reflects the lifelong learning through internet and digital resources. Participants perceived that Artificial Intelligence AI provide a dynamic support to teachers specially for teachers higher education through augmented reality (AR) developed electronic board for board information to ensure the engagement of students with each other and with tutors, it just debate forum for the students and teacher to address diverse issues and topics for learning. AI generate plagiarism facility instead of Turnitin a heavy paid software for teachers to check the originality of assignment and research based tasks of the students, furthermore they collectively work on project and collectively contribute and share the activities to accomplish the task.

### **Artificial Intelligence Contents Design and Smart Grading Procedure**

Participants perceived that AI apps ChaGPT, LASCA and Bingo provides diverse formats of contents designs for curriculum, freelancing, fashion and policy making in varieties of languages. AI provides app to monitor the performance of students and classroom activities. It gives access to teachers to make the students engage in tasks, assignment, group discussion and focused debate. Teacher monitors the brain activities and attention of students through EEG (electro encephalography) and teacher mark the activities with auto grades excellence, poor and average scores. Parents and teacher observe the activities of the children and stimulate them for better performance through AI assisted apps with smart phones and PCs. AI auto grading app help the tutor to observe the weakness and diagnose the type of disorder and at the same time he suggest the recommendation for correction of disorder and complexities in learning areas. AI based techniques save the time and efforts of tutor and institutions and effectively executes the teaching learning operation even out of the classroom and campus. AI provides facilities to explore the need and perception students and determine the effective strategies to



deliver the classroom instruction more effectively and efficiently. AI manages activities for individual and groups under available domain of curriculum, time, space and energy.

### Artificial Intelligence AI Digital Portal and Database for Admission and Selection of Students

Participants perceived that AIED includes services and benefits through digital technology technologies, AI have generated automated instruction in diverse department of education institution such as admission announcement, applications and test and interview pattern, selection procedure. Admission software is AI assisted which provides all relevant information, fess structure, scholarships and eligibility criteria for the candidates. AI motivates to avoid the human bias and discrimination. AIED generate automated grading and reward policy prior academic background and recommendation through e-Proctoring. E-proctoring ensures assure online examination for academic integrity through cameras and microphones to monitor and scan the students' performance. It prevents from discrimination, exacerbating and mental health problems.

### Artificial Intelligence AI Privacy and Protection of Intellectual Property

It analyzed through the research articles and reports that AI app checks biometric surveillance and identity of each student through their respect IDs. AIED supports for personalization includes self-actualization, subjection and interpretation such AIED tools make capable to teachers for the academic fitness of students and keep them up-to-date from the performance of students. AIED provides the authentic security and protection of intellectual property, research works, projects, thesis and dissertation privacy and related ethical. AI maintains data privacy and data protection.

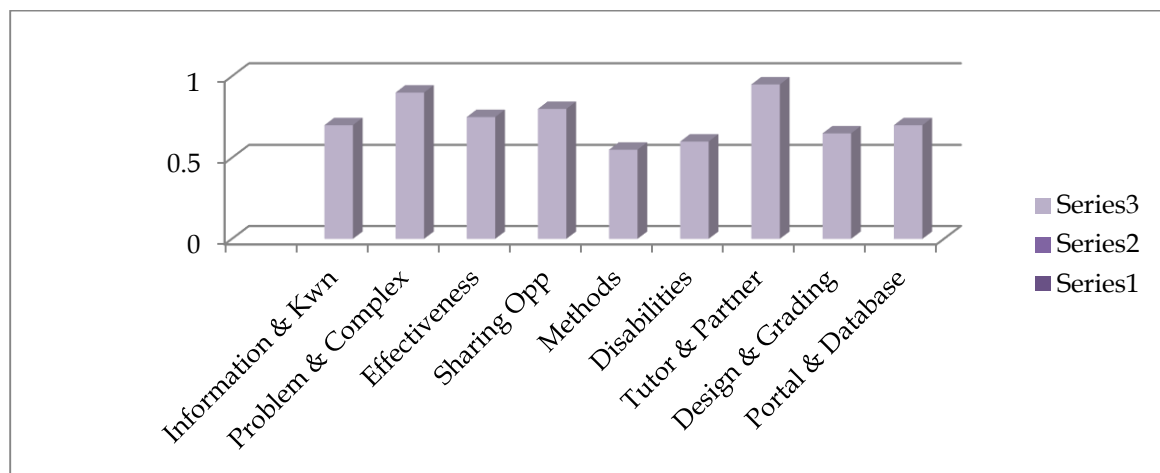


Figure 3 Learning Experience through AI as Adoptive Academia in HEIs of Pakistan

### Discussion

AIED is an emerging trend in education development and it has swept the traditional approach of education. AI highly supports human learning through enhancement in the brain capacity and cognitive level of children. Teachers and students of higher education institutions generally perceive that AI positively leave positive impression and dynamic support in learning practice, it increases enthusiasms, learning commitment and competencies of learning. AI has produced a great cluster of automated app which communicates directly with human intelligence and resolves the queries of human brain. Potential to enhance teaching practices and learning for students. AI advancement has been scattered in almost every field of education business and industry

and supports eminently for education and socio economic development of the World through opening new door of business and marketing which create a great deal of employment for the public. AI estimates the future of human destiny and even surpass the human cognition and wisdom through justification all reasoning and critical thinking which might not possible for human being. AIED provide facilities for learner through the introduction of AI app such as ChatGPT, You Chat, Bing, Wizard and LASA which provide wide access over the learner resources, animation and graphics oriented stuff, audio visual links and vast platform of teaching learning. AIED is a faster and easier opportunity for educational stakeholders to utilize the services like as online learning, off campus, virtual monitoring and assessment and digital spy on the performance of students.

### **Conclusion**

AI is an emerging advancement which reduces human efforts and struggle for better survival, AI largely competes human intelligence and dominant on overall concurrent human reasoning. Emerging trend of AI has transformed processes of human life and made it faster, easier and widely accessible for global users. AI is quite helpful almost in all the disciplines of life such as law and security, education, business and marketing and agriculture and industry. AI mainly supports the domain of education through reformation in teaching learning. AI tools produce a vast treasure of knowledge and information for teachers and students, plenty of learning resources and platforms such as virtual learning website and automated apps. AI has modernize the teaching learning methodology and provided digital support through automated learning, learner ask questions and queries and AI resolve it with justifications. AI have generate app of monitoring and assessment for teachers to observe the performance and grading app to categorize the performance of individual. AI has developed the admission database and application which retreat and preserve the information. Off campuses trend is increasing day by across the World most the HEIs have provide hybrid education service for global aspirants.

### **Recommendations**

1. Artificial Intelligence should be provide HEIs through HEC databases control system so that it might restricted from hacking and breaching the privacy of an individual property.
2. Proper professional training should be given to teachers and students for the execution of artificial intelligence tools.
3. Digital analytical software such as SPSS, NVIVO and Turnitin access to be provided to teachers and students so that they easily access the knowledge and information resources.
4. Artificial Intelligence subject should be introduced through Boards of Studies for all the students of HEIs.

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