



# International Journal of Engineering, Science and Humanities

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## **Incorporating AI Assisted Tools for Visually Incapacitated People- Study Based on Belagavi District Karnataka**

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**Abstract-** All individuals do not enjoy the bliss of having an all healthy body. Several people are living with several disabilities visual impairment is one of it. Taking into consideration the South Indian state of Karnataka in context of Belagavi (formerly Belgaum) district, with a 2011 population of about 4.78 million, visual disability forms a notable portion of the overall disability burden in Karnataka (which had ~1.32 million disabled persons per 2011 Census, with seeing disability around 19% nationally). Visually incapacitated individuals lead a difficult life where struggle is regular and real in terms of mobility, education, daily tasks, and information access. In this technologically advanced world several AI assisted tools like smartphone apps, smart glasses can provide real help to ease the discomfort they face on day-to-day basis. This study explores the usefulness of AI assisted tools in visually incapacitated people of Belagavi. It was seen that adoption of AI tools was low due to awareness gaps, cost, and infrastructure.

**Key words-** Visually impaired people, AI assisted technology, Belagavi, voice assistants, smartphones

### **1. Introduction**

Eyes are an important sense organ of human body. They are the gateway not only to the external world, but also to the inner self. They provide us a unique understanding of the surrounding environment and people present in it. They are a useful tool to learn and educate oneself, enjoy various visual means of entertainment and to see the beautiful world God has created for us. Any person suffering from blindness or impaired vision due to any reason (accidental/ genetic/ age related, or environmental) has to face the world on very difficult terms. Sight and vision are two different aspects. Both of these related to the sense organ of eyes and they allow us to have a better perception and understanding of the surrounding world (Srinivasan et al., 2025).

It is harsh and difficult to live a life where proper vision is absent, and which cannot be corrected through the use of spectacles or any kind of ophthalmic surgery. But still, there are very many unfortunate people around us who are not able to see the world as clearly as others can. There are several schools under the category of blind schools or special schools that teach these kind of visually impaired people to live a life of independence and have a positive self-worth for themselves.



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This is a world of digital technology. And artificial intelligence is one important branch which has marked its place into almost everything we see and do today. 21<sup>st</sup> century is also the time of smartphones and leading a normal life without smartphones just looks like impossible. Even blind people can operate smartphones when, effectively taught to do so. Therefore, came the concept of integrating special applications operated by artificial intelligence into the smartphones. This has allowed the visually impaired people to live a better life. It has been a great and well executed aspect and use of AI now.

## 2. Literature Review

Olawade et al (2025)- The integration of artificial intelligence (AI) into healthcare delivery constitutes a significant transformative development with the potential to substantially enhance the quality of life for individuals with disabilities. AI-enabled technologies, including assistive devices, conversational agents, and rehabilitation systems, offer considerable promise in mitigating health disparities, improving diagnostic precision, and facilitating more effective communication between patients and healthcare providers, thereby contributing to greater equity in healthcare provision.

Swaminathan and Naik, 2025- This study addressed a critical gap in Human-Computer Interaction (HCI) and accessibility research: the near absence of empirical work on **Teachers with Vision Impairments (TVIs)**, who play a pivotal role in educating blind and visually impaired students across the Global South. Drawing on in-depth interviews with 15 TVIs in Karnataka and a nationwide survey of 105 TVIs across 15 Indian states, this paper examines their everyday teaching practices, technological aspirations, and the systemic barriers they face when engaging with digital technologies, including GenAI. Our findings reveal a significant disconnect between the transformative potential of GenAI and the ground realities of the educational ecosystems in which TVIs work.

Lawtone-Bowles (2024)- this research work focuses on combination of Apple intelligence and artificial intelligence to enhance learning experience of disabled students. Researchers imply that AI is able to create accessible personalized and effective environment and environment for students suffering with disability. Tools like adaptive learning platform, virtual simulation, speech to text application, can support disabled students by addressing unique needs of disabled students and enable them to overcome both physical and cognitive obstacles

## 3. Methodology

This study is based on Belagavi district of Karnataka state, India. 400 people who were either blind or who were taking care of blind family members were considered in present study. Study participants were selected by random sampling method from Masheshwari Blind school. Data was collected with help of self-made questionnaire and gathered information was analysed using SPSS 2.0.

**4. Objective-** And the main objective was to find out if integration of AI I assisted tools can help visually incapacity people to live a better life.



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## 5. Research Questions

Two main research questions were asked which are as follows-

Q1. How often do you use AI tools for daily tasks?

Q2. Which tasks do you find AI tools most helpful for? (Primary Task)

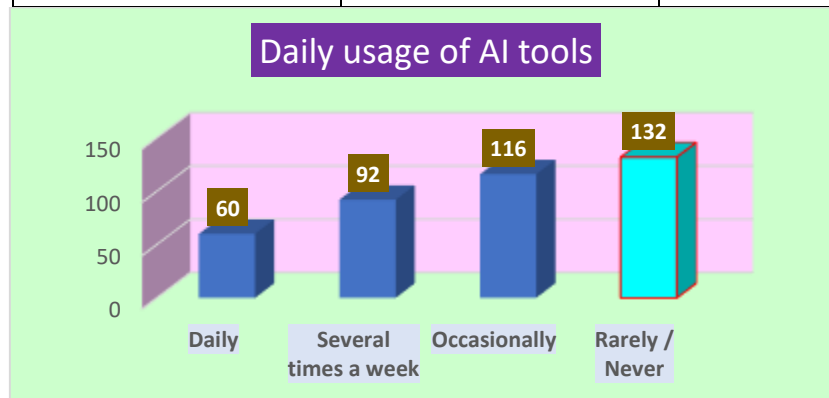
## 6. Result

Mostly students and younger working professionals used voice assistants and ChatGPT for studies or navigation. Regular users included mainly students and tech-trained individuals who used AI for reading documents, writing, and learning. Common working professionals used it during specific needs like reading documents, navigation, or assistance via AI tools. For blind people in Belagavi, improvements that enhance safety, independence, and mobility in familiar indoor environments would make the greatest positive impact on daily life.

Q1. How often do you use AI tools for daily tasks?

**Table 1 How often do you use AI tools for daily tasks**

Frequency	Number of People	Percentage
Daily	60	15%
Several times a week	92	23%
Occasionally	116	29%
Rarely / Never	132	33%

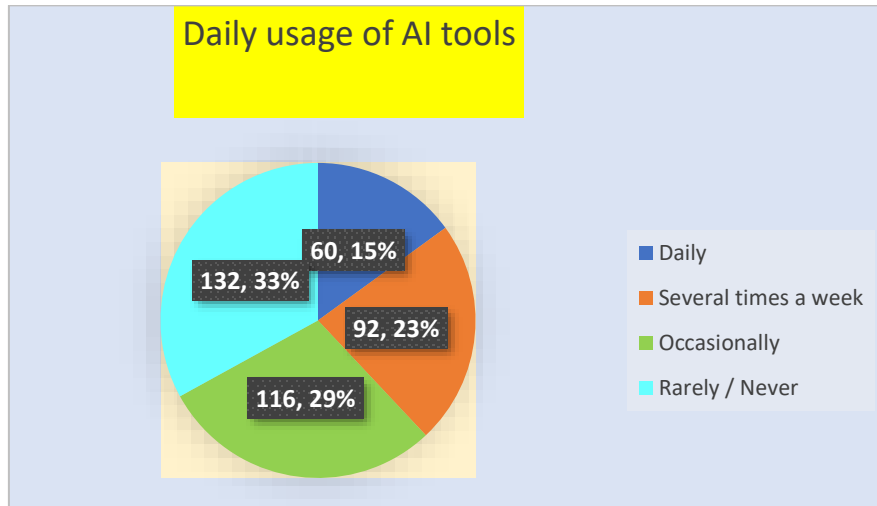


**Fig. 1: How often do you use AI tools for daily tasks (bar graph)**



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**Fig. 2:** How often do you use AI tools for daily tasks (pi chart)

### Interpretation

From above table 1 and figures 1 and 2 it becomes clear that AI tool adoption in Belagavi was moderate. Only **15%** of people were used AI tools daily, while **23%** were using them several times a week. This means only **38%** (Daily + Several times a week) were regular users. From all visually incapacitated respondents **29%** used AI occasionally for specific tasks, while the largest group was of **33%** visually incapacitated respondents who rarely or never used AI tools. This indicates a notable digital divide in the city.

Q2. Which tasks do you find AI tools most helpful for? (Primary Task)

**Table 2: Which tasks do you find AI tools most helpful for**

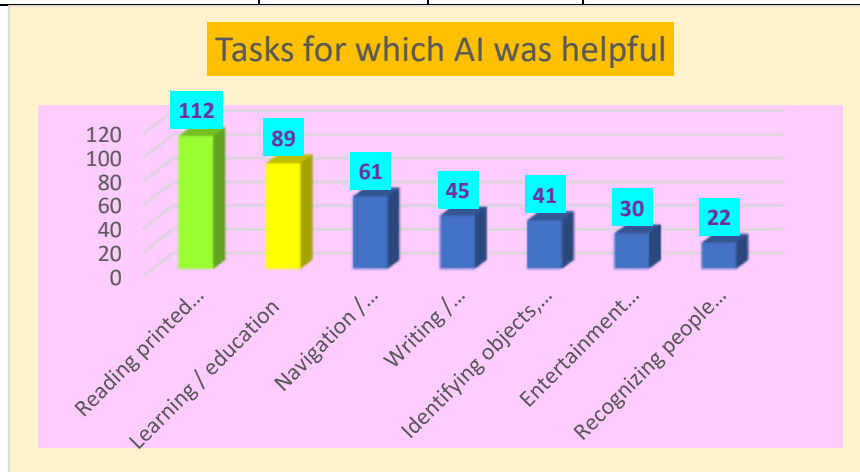
Task	Number of People	Percentage	Belagavi Context
Reading printed text / books / labels	112	28%	Top need. Students and adults use it for textbooks, medicine labels, and documents.
Learning / education	89	22%	Very important for students in Maheshwari School and other institutions.
Navigation / wayfinding outdoors or indoors	61	15%	Useful for independent travel using Google Maps and voice tools.
Writing / composing emails or documents	45	11%	Helpful for students and working professionals.
Identifying objects, products, or colours	41	10%	Used for shopping and daily household needs.



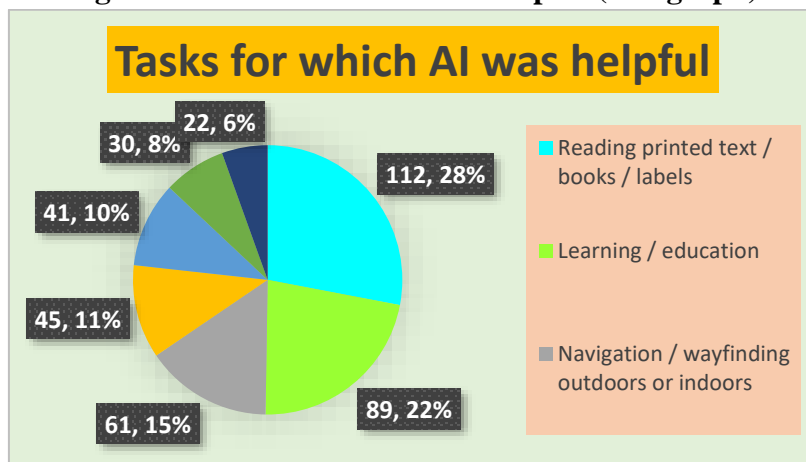
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Entertainment (describing videos, images, art)	30	8%	Growing among younger users.
Recognizing people / faces	22	6%	Least useful for most people.



**Fig. 3: Tasks for which AI was helpful (Bar graph)**



**Fig. 4: Which tasks do you find AI tools most helpful for (pi chart)**

### Interpretation

The data in above table 2 and figures 3 and 4 exhibited a clear priority in how people in Belagavi are using AI tools. **Reading printed text / books / labels** was the most used task with **112 people (28%)**, making it the top requirement. This was followed by **Learning / education** by **89 people (22%)**. Together, these two tasks accounted for **201 people (50%)** which is half of the total respondents. **Navigation** was found to be moderately used by **61 people (15%)**, while productivity tasks like **Writing / composing emails or documents** was lower at **45 people (11%)**. Visual identification and entertainment tasks were found to have relatively less usage.

### 7. Discussion



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Taking into account local studies (e.g., at Maheshwari School of Blind in Belagavi) it was observed that visually impaired people who were also students are dependent on conventional assistive tech like screen readers (JAWS/NVDA), document readers, and basic mobile phones for communication and academics. Although, wide use of mobile phones was seen but challenges included speech software issues and limited advanced features. Thus, here AI-specific tools are mentioned in broader assistive tech discussions but not as daily staples in these settings.

Considering broader Indian trends it can be said that smartphone adoption among visually impaired people has grown significantly (with many "expert" users in urban areas logging heavy daily use of phones for WhatsApp, calls, YouTube, etc., via TalkBack/VoiceOver). AI-powered camera apps for object/scene recognition, text reading, and navigation are available and promoted, especially on Android. However, specialized AI tools (beyond built-in voice assistants) are often used for specific tasks rather than constantly. There are still several barriers in AI adoption like barriers in tier-2 cities like Belagavi (smaller city, mix of urban/rural students) include awareness, cost of data/devices, training, language support (e.g., Kannada support in apps like Google Lookout is recent), and reliance on simpler/low-cost solutions. In present study advanced AI wearables (smart glasses) or premium apps were found to be less common.

Daily use of these was commonly found for basic screen readers/voice features on phones among tech-savvy users. Usage several times a week relates to AI camera/description tools (e.g., for reading labels, identifying objects, navigation help) used by those who have smartphones and know about them. These are task-specific rather than constant. Those participants who reported rarely/never use was for those who were without smartphones, low awareness, or in resource-limited school/residential settings.

Usage is rising with cheaper smartphones, government accessibility pushes (e.g., Accessible India Campaign), and local tech development (many AI assistive projects affiliated with VTU Belagavi). But for the average visually impaired person in Belagavi, occasional use aligns best with current realities (Kori & Mulla, 2022). Most common use was to read out text in printed form. Many participants reported using camera-based OCR apps for books, signs, menus, bills, or school materials. In India, support for regional languages/scripts (including Kannada) makes this especially valuable in places like Belagavi. It was followed by **object/product/colour identification**. In present study AI Apps were found to help with grocery shopping, identifying items, currency, or everyday objects—boosting independence in daily life. Third category was of **navigation** which included outdoor/indoor wayfinding, obstacle detection, and scene description address mobility challenges (noted as a major issue in local studies). AI supplements white canes or basic GPS, though infrastructure in tier-2 cities can limit effectiveness. **It was observed that in Belagavi** awareness and access to advanced AI tools was certainly limited where many people just relying on basic screen readers. There were many barriers like data costs, training, and device availability. It was also



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seen that although AI usage is growing via affordable smartphones and apps, however historic tools still dominated. (Stephen &Ikbal, 2023).

## 8. Conclusion

In present study younger population and students were the main drivers of AI usage. Older adults and less tech-savvy groups exhibited low adoption. Practical daily uses included reading and navigation tasks. It was followed by tasks related to education and productivity like for learning and writing. AI assisted used least were tasks related to entertainment and recognizing 1 faces.

**Conflict of Interests-** NONE

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