

Human Computer Interaction (Hindi mein)

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Inclusivity, Accessibility and Design Principles

Lec09

[Music] Namaskar main Ritwik Bamba is course Human Computer Interaction ka sahayak shikshak hoon. Aaiye yeh tutorial shuru karte hain. Aaj ke tutorial ka vishay hai Inclusivity, Accessibility aur Design Principles. Aaiye inhein ek-ek karke samajhte hain. Sabse pehle accessibility aur exclusiveness kya hote hain? Accessibility se hamara matlab hai ki hum yeh technology yeh design zyada se zyada logon tak pahuncha sakein. Jin logon ko sunne mein dikkat hai, bolne mein dikkat hai ya fir aur koi bhi is tarah ki special zaroorat hai, special needs, disabilities, humein yeh dhyan rakhna chahiye ki jin bhi logon mein kisi bhi tarah ke physical challenges, cognitive challenges, jo log dimagi roop se baadhit hain woh hamare design, website ya app ek theek dhang se istemal kar sakein. Inclusivity ek bada shabd hai aur isse hum yeh kehna chahte hain ki jo hamara design hai woh zyada se zyada logon ki zarooraton ko dhyan mein rakh ke unse istemal kiya jaaye. Isse farak nahi padta ki woh kis background se aate hain. Kya wahan par situation hai. Kya wahan par vatavaran hai. Yeh sabhi logon mein bhinn-bhinn prakar ke logon ko dhyan mein rakhte hue unke bhashaon ko lekar, unki umra ko lekar aur unke culture se related aur bahut alag-alag tarikon ki physical aur cognitive abilities ko dhyan mein rakhte hue banaya jaata hai. Ek inclusive design yeh ensure karta hai ki kisi bhi ek varn ke logon ko vanchit na kiya jaaye. Unhein alag na rakha jaaye kisi bhi product se. Ab aaiye samajhte hain in dono mein farak kya hai aakhir. Yeh dono shabd sunne mein toh samajhne mein toh ek jaise lag rahe hain. But ismein kuch gehre farak hain. Jaise inclusiveness jo hai woh hamara jo istemal karne ka tarika hai, user experience hai woh behtar karne mein vishwas rakhta hai. Un sabhi logon ke liye jinke liye kisi aasan se aasan cheez ko karna mushkil hai. Jaise jo log sunne mein baadhit hain, bolne mein, dimagi roop se pidit hain unke liye. Yeh bahut alag-alag tarike ki zarooraton ko dhyan mein rakhte hue socha gaya hai. Jismein hamara jaise humne pehle bataya ki umra, bhashayein aadi ko dhyan mein rakhte hue banaya jaata hai. Jabki accessibility ek alag shabd hai jo jin bhi logon mein kisi bhi tarah ki dimagi roop se bimari ho unke liye use aasan banaya jaaye use karna jo shaaririk roop se pidit ho unke liye aasan banaya jaaye. Yeh alag-alag divyangon ke liye banaya jaata hai. Ab jo inmein sabse bada farak hai woh hai inclusiveness sabhi ke liye hota hai. Zyada se zyada logon ke dwara use kiya jaaye. Jabki accessibility sirf ek chhote set of jo log hain unke liye hai. Kam logon ke liye banaya jaata hai jo bhi hamare divyang jan hain. Aaiye kuch udaharanon se samajhte hain ki accessible design kya hota hai? Aap sabhi ne YouTube use kiya hoga. Toh YouTube mein aapko ek vikalp milta hai jisse aap ek transcript

dekh sakte hain. Video mein jo bhi bola ja raha hai woh aapke saamne likha hua aa jayega. Isse jo bhi log sunne mein baadhit hain woh video ko padh ke samajh sakte hain wahan par kya chal raha hai. Aise hi aap mein se kuch logon ne video games khele honge. Usmein ek color blind mode aata hai jismein jo log alag-alag rangon mein bhed nahi kar paate, varn bhed nahi kar paate, unke liye yeh banaya gaya hai aur taaki unhein khelne mein aasani ho isliye is design ko aisa rakha gaya hai. Fir hamare paas agla udaharan hai keyboard only navigation. Kuch computer upkaranon mein hum sirf keyboard use karke woh app ko use kar sakte hain. Website ko use kar sakte hain. Sirf keyboard ki madad se. Jo log shaaririk roop se baadhit hain jo mouse ka istemal nahi kar sakte unke liye keyboard use karna ek achha vikalp hai. Yeh unhein sabhi kaam karne deta hai keyboard par bane hue shortcut ki madad se. Fir hamare paas ek yeh color contrast options ka bhi udaharan hai. Jo log theek se dekh nahi paate ya poora unka dekhna theek nahi hota. Unki aankhon mein kuch dikkat hoti hai. Unke liye hamare paas color contrast option bhi hain. Jo kya karte hain ki jo bhi likha hua hai usko achhe se ubhar ke woh padhne mein aata hai taaki logon ko padhne mein aasani ho aur jin logon ko padhne mein dikkat hoti hai unko bhi woh aasani se padha jaaye. Ek hamare paas apne bade buzurgon ke liye bhi ek bahut achha upkaran hai jo hai hamara Amazon ka Alexa seniors ke liye. Yeh sabhi bade buzurgon ke zaroaron ko dhyan mein rakhte hue banaya gaya hai aur unko reminder set kar sakte hain. Apne ghar pe jo log hain unse batchit kar sakte hain. Apne parivar logon se baat kar sakte hain. Emergency assistants ko bula sakte hain. Aur woh yeh sab bina chhuye sirf bol ke Amazon Echo ko bol ke hum yeh kaam karwa sakte hain usse. Aise hi hamare paas jo ek aur hai hamara example, hamara udaharan, woh hai Gmail. Ab Gmail mein ek humein vikalp milta hai screen reader ka. Jaisa ki humne dekha tha ki YouTube mein ek inclusive design banaya gaya tha transcript ke taur par. Usi tarah jo log padh nahi sakte, dekh nahi sakte unke liye screen reader hai jo yeh bol ke suna dega ki screen par kya likha hai. Isse jo log dekhne mein baadhit hain, woh bhi Gmail ko use kar sakte hain sunkar. Ab inclusive design par aate hain hum. Sabse pehle hamare paas Twitter ka example hai jo ki ab X ban chuka hai. Ismein sabhi ke sabhi logon ko jo bhi isko istemal karte hain sabhi upbhoktaon ko humein yeh ek vikalp milta hai ki hum apni marzi ki bhasha mein us app ko use kar sakte hain. Yahan par aap dekhenge bhinn-bhinn bhashayein aapko di gayi hain. English, Gujarati, French, British English, Arabic, bahut bhashayein di gayi hain. Toh jo bhi hamare log hain jo isko use kar rahe hain, iska istemal kar rahe hain, woh isko apni marzi ki bhasha mein istemal kar sakte hain. Aise hi inclusive design ka agla udaharan hamara Uber se hai. Jo log, jo bhi drivers sunne mein takleef rakhte hain ya fir jo sun nahi sakte unke liye Uber ne ek flashing notification banayi hai ki jaise hi aapka driver aapke paas aayega aap apna phone leke usko haath mein khade ho sakte hain and woh chamkega toh aapka driver pehchan lega ki aapko hi woh dhoondh rahe hain. Aise hi hamara agla udaharan iPhone se hai. iPhone mein ek humein assistive touch naam ka ek vikalp diya jaata hai. Ek feature diya jaata hai. Jo log theek se apna haath nahi use kar sakte ya jin logon mein kuch shaaririk baadhayein aisi hain unke liye yeh assistive touch banaya gaya hai jisse hamari screen par hi bahut saare vikalp aa jaate hain jo hum use kar sakte hain bina kisi dikkat ke. Fir hamare paas ek aur udaharan hai yeh ek kursi ka. Ek kursi jo hai hamari ulte haath ko woh ek hi kursi har koi use karta hai aur ek yeh doosri kursi hai

hamari jo hum apni marzi se istemal kar sakte hain. Toh kaun sa design inclusive hua? Jo koi bhi apni manmarzi se usko customize kar sakta hai. Apni marzi se use kar sakta hai. Woh design zyada inclusive hoga. Fir hamare paas Nike se kuch example hain. Nike ne ek Fly Easy naam ke jootे banaye the aur usi ke saath-saath kapdon ki range bhi thi jo shaaririk baadhaon waale logon ke liye banaye gaye the jisse easy access waale zippers jinko bina kisi dikkat khola ja sake aaram se magnetic closures jo bina zyada use kare, bina zyada usmein apni taakat daale aap usko use kar sakte hain. Yeh sab hamare logon ko support karte hain jo shaaririk roop se baadhhit hain. Isi tarah Microsoft ne bhi apne Xbox video games mein ek controller aisa lagaya tha jo isi tarah ke logon ke liye banaya gaya tha. Isse usi mein log alag-alag tarah ke assistive device connect kar sakte hain. Jisse hamare jo gaming jinko pasand hai par jo baadhhit hain kisi bhi tarike se woh fir bhi khel sakein. Isi tarah hamare paas Apple mein Siri aati hai jo bahut hi bhinn-bhinn prakar ki bhashaon mein baat kar sakti hai logon se. Woh ek hi insaan se ek hi samay pe do-do bhashayein bhi sun sakti hai. Agar main kuch bolna chahoon Hindi aur English mein saath mein woh bhi samjhegi. Use batane ki zaroorat nahi hai ki hum abhi Hindi mein bol rahe hain, abhi English mein bol rahe hain. Isi tarah jaise humne Twitter ka example dekha tha. YouTube bhi usi tarah 100 se zyada bhashayein deta hai jo upbhokta istemal kar sakte hain jisse hamara jo app hai woh zyada se zyada logon tak pahunche aur poori duniya mein log isko apni marzi ki bhasha mein sun sakein, samajh sakein aur uska aanand utha sakein. Iske baad hum aate hain design principles pe. Hamare paas paanch mukhya design principles hain jo ki hain Visibility, Feedback, Consistency, Constraints aur Affordance. Toh chaliye aaiye isko samajhte hain ek-ek karke yeh sab kya hai? Visibility. Visibility ka aam bhasha mein kya matlab hai? Jo zyada dikhega, woh zyada dhyan mein aayega, zyada yaad rahega. Visibility kyun zaroori hai? Agar koi bhi upbhokta, koi bhi log kisi feature ko, kisi vikalp ko theek se dhoond hi nahi payenge toh kaise istemal karenge? Woh istemal nahi kar payenge. Woh pareshan honge aur hamara user experience kharab hoga. Jaise ek TV ka remote agar us par diye gaye buttons volume ke, channel change karne ke, on-off karne ke yeh idhar-udhar, upar-neeche kahin chhote se banaye gaye ho toh isse har kisi ko ek pareshani hogi use istemal karne mein time lagega aur woh thak jayega usko istemal karke kyunki use baar-baar wahi zaroori cheez dhoondhni pad rahi hai. Jo zyada istemal hoti hai aur use upar-upar alag se diya jaana chahiye. Jaise ki aap dekh sakte hain ek gaadi mein jo bhi hamare sangeet ka control hota hai, stereo system hota hai aur woh sab side mein diya jaata hai aur jo bhi gaadi chalate time jo istemal kiye jaane chahiye features vikalp unko steering wheel pe bhi diya jaata hai taaki driver use use kar sake gaadi chalate hue aur woh apna sadak se dhyan na hataye. Isi tarah kuch paani ke nalkon mein aajkal naye sensor technologies aa rahi hain. Jismein logon mein ek pareshan karne waali bhavna aa jaati hai ki kahan le jayein apna haath sensor ke paas? Kahan hai sensor jisse paani aayega. Yeh sab mila ke in dono ko, isko ek kharab design banate hain. Isi tarah gaadi mein hi wapas aate hue hum dekhenge ki jo hamari warning lights hoti hain alag-alag tarah ki woh sab laal rang mein di jaati hain aur is tarah se di jaati hain ki unhein dekhte hi pehchana ja sake aur theek kiya ja sake. Isi tarah iPhone mein jo bhi hamare TV ke remote ki tarah zyada baar use kiye jaane waale vikalp hain, option hai, un sabko humein alag se diya jaata hai WiFi, Bluetooth, Wi-Fi Control Center

ke madhyam se. Yeh kaafi zyada accessible hai. Hum apni screen par upar ya neeche swipe karke use dhoondh sakte hain. Isse jo bhi hamare zaroorat ke control hain, zaroorat ke option hai woh hamesha hamari pahunch mein rehte hain. Aise hi iOS, Android, Windows, iOS, Mac OS duniya ke sabhi operating system aajkal dark mode aur high contrast modes bhi dete hain. High contrast mode humne padha tha aur hum high contrast mode se samajhte hain ki jo humein likhe hue akshar hain, shabd hain, woh zyada ubhar ke aayein aur hum unhein aasani se padh sakein. Dark mode mein ek kaale background par safed shabdon se ya halke rangon mein likha jaata hai. Isse logon ki aankhon pe zor kam padta hai aur unke liye aasan hota hai padhna. Isi tarah Kindle, aap mein se bahut logon ne Kindle use kiya hoga kitaabein padhne ke liye, novel padhne ke liye. Usmein hamare paas bhinn-bhinn option hote hain, vikalp hote hain ki hum text size ko kar sakte hain apni marzi se. Humein kitna zyada bade akshar dekhne hain. Font jo hai woh kis tarah ka hai. Screen ki kya brightness hai aur bhinn-bhinn prakar ke hamare paas vikalp hote hain. Jisse jo log dekhne mein baadhit hain unke liye zindagi aasan rahe. Isi tarah hamara agla design principle aata hai feedback. Feedback ka saral bhasha mein matlab hota hai jo bhi humein upbhoktaon se ek unhone humein bataya ki kis tarah ka unhein user experience mila hamara design use karke. Ise bolte hain feedback. Upbhoktaon ko pata hona chahiye ki jo unhone action kara woh hua hai ya nahi. Jaise Gmail use karte hue jaise hi aap koi mail send karte hain, wahan par ek hare rang ka tick ka nishan aata hai aapko yeh batane ke liye ki aapka message chala gaya hai. Aapki email send ho gayi hai. Isi tarah hamare paas Microsoft live hai. Ek udaharan ke taur par jo passwords jitne zyada mazboot hain woh strength ko, password ki strength ko yahan pe ek bar ke form mein dikhata hai. Jaise-jaise aap apna password aur mazboot karenge, zyada mushkil banayenge woh bar green hota jayega, hara hota jayega. Windows mein hi hamare paas ek Windows Narrator ka bhi screen reader option hai jo feedback mein hamari madad karta hai jo dekhne mein baadhit logon ko hamare system se interact karne mein, usko istemal karne mein madad karta hai. Isi tarah iPhone ke keyboard mein jab bhi hum koi akshar dabate hain, humein ek touch sa milta hai, tactile feedback milta hai. Halki si vibration feel hoti hai. Yeh batane ke liye ki hamara jo akshar likha gaya hai woh computer ne padh liya hai. Isi tarah Microsoft mein hi Word usmein agar hum kisi bhi shabd ki spelling galti se kuch aur likhte hain jo woh nahi hai toh uske neeche ek chhoti si laal rekha aa jaati hai. Isi tarah agar koi spelling mistake ki jagah koi grammatical mistake hai toh usmein laal ki jagah neeli rekha aa jayegi. Agla hamara design principle hai consistency. Consistency ka saral matlab hota hai jo hamara design hai woh poornatah samaan rahe. Har jagah ek hi design ka principles. Aur yeh kyun zaroori hai? Isse hamare jo bhi user hain jo log hain istemal kar rahe hain woh yeh dekh ke bata sakte hain ki kis tarah se cheezein kaam karenge jisse hamara use samajhna aur yaad karna aasan ho jayega. Jaise zyada tar apps mein computer applications mein aapne dekha hoga peeche jaane ke liye ulte haath ko upar ek teer ka nishan bana hota hai back jaane ke liye. Ab isse fayda kya hota hai? Consistency ke bahut saare fayde hain. Jaise sabse pehla koi bhi cheez har jagah consistent rahegi. Ek jaisi rahegi toh use hum door se hi recognize kar payenge. Pata chal payega humein ki yeh kya hai. Jaise jahan bhi hum ek Mercedes Benz ka logo dekhte hain. Hum turant yeh samajh jaate hain ki hamari Mercedes Benz ki baat ho rahi hai yahan pe. Isi tarah isse aasan hota hai yaad karna, samajhna

aur istemal karna. Jaise hamara humne dekha peeche jaane waala jo udaharan tha aaj ke din mein sabhi websites pe applications mein ulte haath ko top pe hi hota hai back button. Isse hum koi nayi website bana rahe hain. Toh humein yeh batane ki zaroorat nahi hai ki kahan pe hai back ka button. Yeh hum maan ke chalte hain ki user ke paas purana ek experience hai. Unka anubhav aisa reh chuka hai ki jo peeche jaane ka button hai woh ulte haath ko upar hi hoga. Zaroor consistency sundar bhi banata hai kisi bhi design ko. Sabhi website designs mein zyada tar do colors use hote hain. Do rang use hote hain. Ek primary color, ek secondary color. Aakhirkaar teesra hamara jo fayda hai woh hai is consistency se confusion nahi hoti. Users ko pata rehta hai ki unhein kab kya karna hai. Aaiye iske kuch udaharan dekh sakte hain hum. Ek yeh khaali jo dabba hai hamara yeh baaki paanchon dabbo se alag hai. Ismein aap dekhenge seedhe haath ko nishan hai. Ismein bhi, ismein bhi, ismein bhi aur yahan tak ki ismein bhi jabki ek yeh jo peele waala hai dabba ismein ek ulti disha mein diya gaya hai teer. Agla design principle hai hamara constraints. Constraints ka matlab hota hai rokna. Constraint karna. Itne saare vikalpon ko kam karna taaki logon mein ek confusion ki bhavna na paida ho. Yeh do tarah ke hote hain. Physical aur psychological. Asal mein exist karne waale aur dimagi roop se exist karne waale. Yeh kyun zaroori hai? Jab hum users ko limit kar dete hain, jab unko hum bahut zyada options nahi dete hain, tab unke liye task ko complete karna bina galtiyan ke zyada aasan ho jaata hai. Jaise kuch apps mein jab tak aap password ko itna mushkil nahi banayenge usmein aath shabd nahi daalenge usmein ek number nahi daalenge tab tak woh submit ka aapko vikalp hi nahi dega. Isse aap baadhit ho jaate hain ki aapko aath shabd aath akshar usmein ek number yeh sab aapko daalna hi padega. Tabhi aap aage ja payenge. Usi ka ek udaharan hai. Yeh username ke liye humein diya gaya hai ki teen se 25 aksharon ke beech mein hona chahiye. Isi tarah password mein bhi aath akshar, ek chhota, ek bada, ek number, ek special character. Isi tarah yahan par aap dekhenge jab tak aap yeh I accept the terms and services nahi karenge tab tak yeh aapko register karne hi nahi dega. Aakhirkaar aata hai hamara affordance. Affordance ek alag design principle hai ki jo design ke elements hain woh khud yeh batayein, khud bolein woh ki aage kya karna hai aur yeh kyun zaroori hai. Agar koi cheez ek alag tarike se dikh rahi hai toh jo hamare users hain jo log hain woh use khud ba khud istemal karna seekh sakte hain jaise agar koi bhi button utha hua hai aur click karne laayak lag raha hai toh zyada tar log use click kar denge na ki agar koi simple sa plain sa text likha ho. Isi tarah ek yeh scroll bar jo diya jaata hai, yeh dekhte hi humein samajh aa sakta hai ki iska kya istemal hoga. Isse hum upar neeche aa sakte hain page mein. Aise hi elevator ek jo hoti hai hamari, lift jisko kehte hain hum, usmein agar humein upar jaana hai toh hum yeh button dabayenge, neeche jaana hai toh neeche waala button dabayenge. Toh isse hum yeh button dekhte hi bata sakte hain ki iska kya istemal hoga. Isi tarah kisi bhi website par jo link hote hain, woh neele kiye jaate hain. Aur jo link click ho jaata hai uske baad woh ek purple se color mein aa jaate hain. Isi tarah hamare scroll bar ki tarah ek volume slider ka bhi option diya jaata hai. Bahut hi alag-alag apps mein jismein hum kuch gaane baja rahe hain, sangeet baja rahe hain, koi picture dekh rahe hain. Yeh bar jo hai hamari yeh dekh ke bata sakti hai ki hamari abhi volume kitni hai aur humein badhani hai ya ghatani hai. Isi tarah ek button jo hai hamara hum use dekhte hi samajh sakte hain ki use dabana hai. Ek darwaza jo hai hamara

hum uska handle dekh ke bata sakte hain ki humein use apni taraf kheenchana hai na ki dhakelna hai. Aise hi yeh bahut darwaazon par aapne is tarah ka ek gol sa knob dekha hoga. Yeh bhi humein dekhte hi batata hai ki humein ise ghumana hai. Kyunki logon ko purane anubhav reh chuke hain is tarah ke upkaranon ke saath toh unke liye ise istemal karna aasan hai. Is tarah ke slot jo hain woh yeh batate hain ki ismein kuch daala ja sakta hai. Ab aapke liye ek in-class exercise di gayi hai. Humein yeh batana hai ki in nimnlkhit jagahon pe kaun se design principle use ho rahe hain. Sabse pehla hai hamare paas mouse ka click. Fir keyboard mein same tarike se ek hi tarike se jo keys hain unka likha jaana. File option ki placement Microsoft Office mein, ek mixer grinder ki jo machine hai woh start nahi hoti jab tak usmein mixer na daala jaaye. Mouse ko ek paper weight ki tarah use karna aur logon ka cursor ko physical jo hamari screen hai uske beyond na move kar paana. Lijiye thoda sa samay aur fir hum isko samajhte hain. Chaliye inko samajhte hain hum. Jab humne mouse ko click kiya toh ek aawaz aati hai click ki. Isse humein pata chalta hai ki hamara jo click hai woh ho gaya hai. Isliye yeh ho gaya hamara feedback. Doosra hai hamare paas jab alag-alag laptops mein jo key hoti hai keyboard mein woh same tarike se di gayi hoti hai. Toh har jagah same hai isliye yeh ho gaya hamara consistency. Jo hamara teesra hai file option woh agar top left mein diya gaya hai Microsoft Office mein toh hum isko do nazariyon se dekh sakte hain. Ek toh ki har jagah hi woh ek jagah diya ja raha hai. Iska matlab hai consistency. Jabki upar ulte haath ko dekha jaaye toh wahan par hamari aankhein sabse pehle jayengi toh visibility ke andar bhi aata hai. Yeh. Isi tarah ek jo mixer grinder hai woh chalu nahi hota jab tak usmein jar na lagaya jaaye. Yeh ek udaharan ho gaya hamara constraints ka. Humne usko constraint kar diya, rok diya. Isi tarah mouse ko paper weight ki tarah use karna ek affordance ke usmein aa gaya. Aur aakhirkaar jab log cursor ko move nahi kar paate physical screen ke door woh aa jayega hamara fir se ek constraints mein ki hum aur door nahi ja sakte. Yeh toh thi hamari exercise. Ab hum aapke liye kuch homework dekhte hain. Aapko Airbnb, ek kaafi mashhoor application hai. Aapko usko dekhna hai aapko smartphone pe ya fir internet par unki website ko aur aapko yeh sab cheezein batani hai. Fir unka target user base, woh kin logon ko target karte hain? Woh kaun hai? Fir humein Airbnb ki website ko design principles ke taur par use samajhna hai, batana hai ki kya hai us website mein aisa aur aakhirkaar humein yeh batana hai ki woh ek achha design hai ya ek bura design hai. Aur fir humein yeh batana hai ki jo hamare Airbnb ke developer aur designer hain woh kis tarah Airbnb ko aur behtar kar sakte hain unke designs ko. Aur jaise agar humein kuch behtar karne ka vikalp dena hai toh hum unhein likh sakte hain ya bana sakte hain ek kaagaz par aur aap fir use de sakte hain. Yahin tak tha aaj ka tutorial. Dhanyavaad. [Music]