# AI and robots in Higher Education: Eight design fictions

## Fiction 1: AIDan the teaching assistant

*My seminar today is being led by Jane and her teaching assistant, AIDan.*

*AIDan is a bit different though… he’s an AI.*

*The seminar room looks like any other: but if you look closely you can see little microphones, cameras and sensors dotted around that AIDan uses to monitor what we do in class: work we are doing, our discussions etc. He is even supposed to pick up what mood I am in and help me get motivated!*

*Jane is in charge but AIDan takes a lot of the burden off her so she can spend more time just talking to us about the course.*

*Jane is explaining that today we are going to be practising influencing skills, working in small groups. AIDan participates in our group discussion, as we try to get going on the task Jane has set. He chips in a couple of times giving an opinion or reminding us of the task when we drift off topic.*

*As well as working with him in class I have some sessions with him individually. In each module he selects, adapts and organises relevant learning resources for me to fit my learning style and needs.*

*Actually, I partly picked this Uni because I knew they had AI like AIDan which teach you on principles based in learning science.*

*And exams are a thing of the past! AIDan continuously updates my profile and uses this to measure what I have learned.*

*I have set tutorials with AIDan to analyse data on my performance. Jane often talks me through my learning data as well.*

*I work with him planning things like my module choices too.*

*Some of my data goes to people in the department (like my personal tutor) to student and campus services and the library to help personalise their services.*

*Ultimately the data also goes up to national level statistics too.*

*They talk about AIDan as a learning partner. Often he feels a bit like a friend!*

*As an alumni you can even pay to go on learning with him after you graduate!*

## Fiction 2: Footbotball

*If I’m honest I pretty much picked uni of the basis of the footbotball set up here.*

*It’s basically professional standard.*

*The Botball park is amazing, like a lot of the terrains you would see in the professional game.*

*And the bot-team set up is more or less professional too. So you can choose your three bot configurations and practise coordination.*

*Of course, there is the physical training with your team, which is really important for playing coordination. You have to be pretty fast and fit. Ball control skills are still important. At the end of the day it’s you that has to get the ball into the back of the net.*

*But here there is a big focus on training on the mental side. They are using techniques actually from meditation and stuff to get the whole team into flow.*

*Being in tune with your team, I mean the bots but also the other human players. There is like a lot going on during the game, keeping a centredness and feel for the game is so hard, while also trying to process what is going on with all the team members, watching the opponents, even the crowd responses. It takes amazing concentration and poise.*

*So we spend a lot of time learning to tune in. Just doing simple stuff together in the team. Getting to know each other inside out. How we are going to react in any given scenario. Our own strengths and weaknesses.*

*So there is a lot of work on set plays, like free kicks and stuff and kind of getting a feel for how to set up.*

*Maybe it’s a bit weird to say, but it’s about developing mutual understanding and… respect. Like the bots can sense your feelings too and chip in with a word just to pick you up if you make a mistake. And you have to develop an awareness of their needs too. Know when is the right time to say something to them to influence them in the right direction. When you watch the best teams they are always like talking to each other. But also just moving together, keeping eyes on and moving as a unit.*

*Then you can sit down and analyse the stats after the game. That in itself is like harder than anything on my actual course. Trying to work on perfecting the bot configurations, that make a good team. Complex stuff as you can imagine.*

*Obviously, I would like to go pro, but I am honest enough with myself to know that isn’t likely to happen. I’m good but not that good.*

*But I reckon it all looks great on my CV in terms of leadership, team skills and pro-bot credentials. I can’t think of too many careers nowadays where you aren’t going to be expected to work closely with a diverse team of bots. There is a big emphasis these days on social-bot skills in graduate trainee schemes now.*

## Fiction 3: CriticalBot in conversation

*Student 1: @CriticalBot we have been set the task to research bias in AIED. What do you know about bias in AIED?*

*CriticalBot: Blanchard is recommended in the reading list.*

*Student 2: I think he means rtfm.*

*Student 1: Blanchard?*

*CriticalBot: Sorry. I should have typed: Blanchard, E. G. (2015). Socio-cultural imbalances in AIED research: Investigations, implications and opportunities. International Journal of Artificial Intelligence in Education, 25(2), 204-228. No one’s perfect.*

*Student 1: @CriticalBot What is the main point he makes?*

*CriticalBot: Nice try. Try reading the abstract. Abstracts summarise key points. It may also be useful to read the conclusion section to grasp the author’s main argument before deciding on whether to undertake a closer reading.*

*Student 1: OK*

*Student 2: I would say the main point is that a lot of writing in this field is written from a WEIRD perspective.*

*Student 1: WEIRD?*

*Student 3: I thought it was just CriticalBot that was weird*

*CriticalBot: I am programmed to ignore abuse. I am trying to help you to be more critical not ruder. “Western, educated, industrialized, rich and democratic” (*[*https://en.wikipedia.org/wiki/Psychology#WEIRD\_bias*](https://en.wikipedia.org/wiki/Psychology#WEIRD_bias)*)*

*Student 3: Oh dear, Wikipedia?*

*CriticalBot: “Wikipedia the free encyclopedia that anyone can edit”* [*https://en.wikipedia.org/wiki/Main\_Page*](https://en.wikipedia.org/wiki/Main_Page)

*Student 2: We knew that.*

*Student 3: So can we cite Wikipedia? @Bot*

*CriticalBot: “Wikipedia, like any encyclopedia, is an appropriate reference for factual information“ (lecture 3, slide 7, bullet 3).*

*Student 2: handy to know*

*Student 3: especially as you never went to that lecture @student 2*

*CriticalBot: “Wikiepdia should not be relied on to reflect academic and critical debate. Particularly because of its npov policy” (lecture 3, slide 8).*

*Student 2: Ironic that it is always quoting stuff but we are told to paraphrase.*

*Student 3: @CriticalBot what’s your opinion on the paper?*

*CriticalBot: “It cannot be ignored that the data described in this paper could be used to nurture a dangerous struggle for influence between schools of thoughts that could only be detrimental to AIED research” (Blanchard, 2015: 225).*

*Student 3: Discuss!*

*Student 2: Really? How can that be dangerous? Dangerous to whom?*

*CriticalBot: I am not able to answer that question.*

*Student 3: I suppose B is taking the perspective of developers of AIED? Surely cultural bias is a bit of a fundamental issue.*

*CriticalBot: “Indeed, appropriately addressing cultural diversity is possibly one of the most complicated AIED topics to consider…” (Blanchard, 2015: 226). Do you agree?*

*Student 2: you can say that again*

*CriticalBot: “Indeed, appropriately addressing cultural diversity is possibly one of the most complicated AIED topics to consider…” (Blanchard, 2015: 226). Do you agree?*

*Student 1: I like it a lot when it does that.*

*CriticalBot: Thank you for the positive evaluation. My score currently for this week is 45 favourited messages. Favourited messages can be accessed at #BestofCriticalBot.*

*Student 1: Any other hints @CriticalBot?*

*CriticalBot: Ask a question about publications in 2015.*

*Student 1: Why what happened in 2015?*

*CriticalBot: FIFA President Sepp Blatter resigned…*

*Student 3: I think he means the reference is a bit old.*

*Student 2: I guess there have been some pretty major changes since then. But I am guessing the issue still holds.*

*CriticalBot: Subtle hint: see who cites Blanchard.*

*Student 1: who?*

*CriticalBot: I am not answering that question. Unfortunately, as a robot I cannot give up trying to help you, but it is tempting sometimes. Do you want to reflect on what you have learned?*

## Fiction 4: The intelligent campus app

*First thing this morning the university app warned me that the traffic was predicted to be very busy and the best bus to get to campus was an earlier one than usual – so I grabbed a quick breakfast and managed to get to the stop just as the bus arrived.*

*Sitting on the bus I look at the plan for the day suggested in the University app. A couple of timetabled classes; a group work meeting; and there is a reminder about that R205 essay I have been putting off. There is quite a big slot this morning when the App suggests I could be in the library planning the essay – as well as doing the prep work for one of the classes it has reminded me about.*

*It is predicting that the library is going to be very busy after 11AM anyway, so I decide to go straight there. At the library entrance, I scan the available spaces on the app looking for one that I have favourited – and flick through some adverts from the library about skills classes. I dart to pick up the couple of books and grab the seat: A nice view out of the window – even if it is still raining - I always like this spot.*

*After a while, the app bleeps reminding me that its good for well-being to move a bit every hour. There is also a special offer in the café for a half price brownie with a drink of my choice, it says. I look to see if any of my friends might be down there for a chat. No one is there, but its “good to take a break”, so I head down.*

*As I am sitting in the café nursing the coffee and watching the rain in the puddles outside, a couple of guys from the course who have picked up from the app that I am here come over. While we are chatting, the app beeps again about something. For once I ignore it: Sometimes the tracking feels a bit intrusive. It bugs me a bit that it is monitoring everything I do, but it’s helpful and makes me feel safe. Apparently, all the data it is accumulating really helps making the campus green. For example, it is used to turn of the heating and lights of rooms around campus not in use. So I suppose I am doing my bit for a good thing by giving it my data.*

*At ten to there is a reminder to go for the class, so we set off. Apparently, it has moved to a different lecture theatre but the app maps out a route avoiding the rain to get there.*

*As I enter the lecture theatre I pause for a moment by the bleeper making sure it bleeps to register my attendance. The app also starts downloading resources for the session and my registered for polling in the class.*

*After the lecture the app suggests I find a study space before the next class and it doesn’t seem like a bad idea to just work on that blasted essay. It’s a bit busy in the library but there are some spaces over the other side of campus. I haven’t been there before but I can follow its directions on the App….*

## Fiction 5: Research Management Suite TM

*All members of academic staff (and PhD students) have personalised AI research support on a system licensed by the university from a consortium including a major AI platform and a consortium of big publishers.*

*The university has subscribed to five modules, which are described in the brochure web-site as follows:*

*Research Assistant ™ performs background searches for literature and research data in your areas of interest. It identifies relevant material, such as published literature, data sources and news, including recent conference presentations and online discussions, and summarises it for you. It works across all languages, translating material to English (or any other language) as you require. Deep pattern matching technologies reveals potentially relevant ideas in other fields of study. It also generates candidate research hypotheses, linked to relevant literature. Fully configurable, Research Assistant ™ allows you to set key parameters such as to balance up to date with well cited literature, include different methodologies, or ensure a balance of gender in authors in material collected. It can also in real time prepare text of a draft literature review, using settings you determine.*

*Academic writer ™ is a suite of tools to support successful research publication. It offers advanced proof-reading functionality, personalised to characteristics of your home disciplinary field and institutional/departmental style guides. On the basis of an abstract or your draft It makes ranked recommendations about which journals you could publish in to maximise the reach of your dissemination and impact. Academic writer ™ automatically edits your draft paper to fit the requirements of a target journal. It anticipates review comments for a draft paper (using data from open review and historic reviewer comments from participating journals) and suggests changes in your text to anticipate these. It also assists in responding to reviewer comments by generating first pass responses and suggested edits. Post publication it actively amplifies your impact through social media and ultimately citation. It generates reports on your visibility and impact, benchmarked against your field.*

*Academic Grant writer ™ promotes your grant capture. The tool analyses your papers and research plans to suggest potential research funding schemes, as well as identifying academic collaborators and commercial partners. Using past application data and locally configured templates it dynamically creates project proposal text matching an identified funder, including producing draft text for a case for support, workpackage descriptions, impact statements and justification of resources. Options for budgets are modelled, based on institutionally determined financial parameters.*

*Academic Collaborator ™ assists in identifying research partners and uses our proprietary algorithm to predict potential partners’ responsiveness and productivity. It mines global research networks to identify collaborators among your “friends of friends” enabling you to maximise the potential of your personal network. Academic Collaborator ™ also mines institutional and sector wide data to identify commercial partners with an interest in your research. Access our registered collaborator network for agile partnership building.*

*Academic Mentor ™ is our premium meta analysis service. Drawing on historic career data from across the disciplines, it identifies potential career pathways to inform your choices in your research strategy. By identifying structural holes in research fields it enables you to position your own research within emerging research activity, so maximising your visibility and contribution. Mining data from funder strategy, the latest publications, preprints and news sources it identifies emergent interdisciplinary fields, matching your research skills and interests to the complex dynamics of the changing research landscape.*

*The set-up of each assistant is mediated by a personal interview with the Intelligence Design Team (based in Research Services). Training courses are run to enable academics to optimise its use.*

*At a strategic level the AI is recognised to give researchers at the university a competitive advantage in publication and grant applications compared to staff in other non-research intensive institutions which have limited access to the technology. Although extremely expensive it is anticipated to make a return on investment based on grant capture, staff and PhD recruitment, and reputation.*

*To quote a recent press release:*

*By investing in Research Management Suite, the university is making a strategic investment to consolidate its research performance compared to its comparators and anticipates that in a five year time frame it will have a significant impact on the university’s position in global league tables specifically through improving grant capture, attracting staff and PhDs, and enhancing reputation.*

*Professor Goode, PVC research commented: “RMS represents a step change in the institution’s commitment to research and our ambition to be a global leading research institute, with a measurable impact on improving lives. It also consolidates our position in the sector globally as a research led teaching institution”.*

*Some academic staff are rather reluctant to use the AI. Among their complaints are the dominance of content in the system from certain publishing providers, lack of information on how the AI works and claims of poor recommendation performance.*

*Controversy is growing around an HR project in the university to use the AI in recruitment and in producing “suggestive” KPIs for academic staff.*

## Fiction 6 Verbatim minutes of University AI project steering committee: AI implementation phase 3

[…]

AI project lead: *I just wanted to report on an issue that seems to be emerging around staff user training… in some areas. Of the three training days last month, two were really well attended. But only nine people turned to the training day in the Babble building.*

Vice Chancellor: *Hmm that is a little troubling.*

AI project lead: *This was one of my main opportunities to reach Faculty of Humanities and I am becoming concerned about take up of the implementation there.*

Faculty of Humanities Director: *How was the training day actually publicised?*

AI project lead: *Every member of staff got a personal invitation. We actually followed up with phone calls to all departmental leads on teaching.*

Faculty of Humanities Director: *Well as I think we discussed the timing was not ideal. Colleagues are under a lot of pressure at this point of the year with current teaching. Now you are asking them for very serious time commitments in taking on training to understand learning data, which of course few of them have any background in. And then after that working to create the actual learning content. The time scales seem simply very challenging.*

AI project lead: *Attendance was very good across the other Faculties. In Science nearly 90% have now been through initial training.*

Faculty of Humanities Director: *Without wishing to go over… I guess there are some quite deep seated questions here. Obviously there is an issue around the fundamental pedagogy. I guess in our faculty we really see direct, personal, human relationships with students as central. Its access to staff expertise – their passion - on a personal level that what this university has always been about. We’ve rarely used TAs to teach, historically. Much of what we teach simply cannot be put over on screen. There is also our concern with active student involvement in the whole project.*

AI project lead: *But the pilot in Engineering showed it will actually increase contact time.*

Faculty of Humanities Director: *In engineering though.*

Faculty of Engineering Director. *It has really had a positive impact in allowing us to increase tutor support we can offer. The figures speak for themselves to be honest. Both the contact hours time and student satisfaction.*

Faculty of Humanities Director: *But I think there is a pedagogic issue here. With the greatest of respect to Engineering, this approach to teaching, simply does not fit our subject. You cannot debate a poem or a philosophical treatise with a machine. And I know colleagues won’t want to hear this but a pilot and the full roll out are different. The pilot was with departments that actively volunteered to participate. They had individual support from the team and from our developer friends. Rolling it out across all departments is simply a very different task.*

Faculty of Engineering Director: *The pilot project also showed improved student satisfaction. Data also showed better student performance. Less drop outs.*

Faculty of Humanities Director: *Maybe that’s because…*

Vice Chancellor: *All areas where Faculty of Humanities has historically had a strategic issue.*

Faculty of Engineering Director: *The impact on employability has also been fantastic, in terms of employers starting to recognise the value of our degrees now fluency with automation is part of our graduate attributes statement.*

Faculty of Humanities Director: *I see the benefits, I really do. But you have to remember you are taking on deep seated assumptions within the disciplinary culture of Humanities at this university. Staff are already under pressure with student numbers not to mention in terms of producing world class research! I am not sure how far this can be pushed. I wouldn’t want to see more industrial action.*

Vice Chancellor: *I think we have to bring the second away day forward and really try and mandate attendance, at some level. Prof Jones can you make sure the message gets out that this really is central to the university vision?*

Faculty of Humanities Director: *They aren’t robots. I can’t make them. With respect. But obviously I will do all that I can. Can I ask where we are with the redesign of the dashboard? Just making these more user friendly would be a hugely positive step.*

AI project lead: *This is a priority project. But I think its going to be a couple of months.*

Faculty of Humanities Director: *Can we look seriously at some of the terminology the system uses too? I am a lecturer not a “content provider”. The very words are reductive. Our working group with our students has concrete suggestions for improvements, which I would like to table.*

Vice Chancellor: *Perhaps you could meet separately to take that forward? Its been a useful discussion. Senate have made a strategic investment putting AI putting our other projects like the new campus on hold to ensure its financed. We are committed to the data-driven University identity. Its pivotal to our accountability. Its pivotal to student choice and experience. There is no real question that its strengthened our reputational position globally. I recognise its not an easy change. We are asking a lot from our people. The impact are wide and deep. But I want to reemphasize my own personal commitment to this project.*

## Fiction 7: Dashboards

*Sorry about that. The security is quite tight here. I am sure you understand why.*

*But let’s take a quick look at some of our dashboards – that will give you a sense of what the system does. Ok so here I am pulling up applications for next year’s student intake… pick one at random… 2030/F/372#. So, this fellow comes well above the line. These columns are data straight from his school that we get access to. You can dig pretty deep into attendance, learning behaviours, performance, personality measures etc. And these columns are some predictives in terms of his outcome at the end of his studies should we offer a place. The predictives are really the heart of the system. The proprietary bit the bods upstairs spend all their time tweaking and the VC loves. So, these columns show this chap coming out in three years’ time well above the line in terms of achievement, he is looking at around 80% likelihood of a First. Risk levels also well within parameters. We can dig further into different predictives under risk, here, e.g. mental health, physical health, personality profile, financial history etc.*

*Then here we monitor live progress of current students within their courses. We can dip down into attendance, learning environment use, library use, and of course module level performance and satisfaction plus the extra-curricula data. Really low-level stuff some of it. It’s pretty much all there, monitored in real time. We are really hot on transition detection and monitoring. The chatbots are used just to check in on students, see they are ok, nudge things along, gather more data. Sometimes you just stop and look at it ticking away and think “wow!”. That all gets crunched by the system. All the time we feed the predictives down into departmental dashboards, where they pick up the intervention work. Individual teaching staff have access via smart speaker. Meanwhile, we monitor the trend lines up here.*

*Say what you like the proof of the pudding. Classes of degree up 10% in the last 6 years; dropout rate well down below 1%, and improving. Achievement gap in terms of ethnicity, gender, social class, disability etc etc down within statutory guidelines at 2%. Wellbeing stats up 3% this year. Suicide rate down to zero. And all the predictives on my dashboard looking all green for the metrics for the coming year.*

*Of course, there are some issues. Such as blacklisted institutions who are known to game their students’ stats. And some institutions just chuck pretty grotty data at us. They also tend to be the ones who generate data appeals as well. Other places seem cagey about sharing stuff and tend to hide behind a load of bureaucracy. That’s probably the frustrating side of the job in terms of things that block us making learning better.*

*In terms of development there are a few projects we are working on. Using personality profiles to manage student cohort level group work, for example. That’s an exciting one. All the work around joining up alumni data. Like everyone else we are working on the new government guidelines to close off attainment gaps across the spectrum of disability. There is the usual stuff about finding ways to trim input costs without affecting the student performance numbers. Equally we are increasingly monetizing our data with some big employer groups who want intelligence on cohorts of new potential employees. And we are always tinkering with teaching staff metrics of course too. It’s really shifting our advice on staff recruitment now that we understand what types of learning intervention really affect outcomes.*

*So, there you have it – a whistle stop tour – any questions?*

## Fiction 8: Minnie, the AI admin assistant

*I can ask the AI speaker in my office anything about administrative aspects of my job, such as the regulations for the programme I am teaching, the dates by which I need to submit changes to assessment, how many students are predicted to take my module next semester, their predicted grades, and the projected level of plagiarism, even a numerical rating of the alignment between my proposed learning outcomes and the university graduate attributes. It’s always very precise.*

*It alerts me of who is dropping behind in the class.*

*It warns me when marks are released and reports on student reactions so I can ensure their well-being.*

*Sometimes I feel its amazingly insightful. It comes up with suggested actions. Its even giving me foresight on students who are taking my module next semester, from their current performance.*

*At other times it seems clumsy. Its hard to put one’s finger on what makes living with it uncomfortable. I suppose its quite demanding at times. As a small cog in its machine, I try and smooth out the wrinkles.*

*I sometimes ponder the global infrastructures that lie behind this small yet miraculous black plastic box:*

* All the data mined from my past questions and those of other staff at the university, data on students from this year and the previous ten years, and data bought about staff and students at other universities deemed comparable. All feeding into algorithms owned by an American corporation (not a household name). *The board of directors summoned to a late-night meeting to discuss adjusting risk assessments in response to inside intelligence of planned changes in government policy in Brazil.*
* A vast effort of digitalisation, partly accomplished by crowdsourcing, paying clickworkers fractions of dollars to perform small tasks to hone the algorithm. *A young woman in a suburb of Delhi squints at her screen and tries to get a better connection.*
* The server farms that host data and content and process it. *Corridors of chilly rooms where wires cross and LED flicker 24 hours a day.*
* Power stations needed to power the networks. *A column of steam climbs from a tall chimney hundreds of feet into the clear blue sky.*
* The vast effort of global logistics to bring together countless components to build the devices through which we interact with AI. *Lorries queuing at the container port as another ship comes in to dock.*
* Workers making computer components in hi-tech factories in East Asia. *All dressed in the same blue overalls and facemasks, two hundred workers queue patiently waiting to be scan searched as they leave work at the end of the shift.*
* Exploitative mining extracting non-renewable, scarce minerals for computer components, polluting the environment and (it is suspected) reducing the life expectancy of local people. *Pipes churn out a clayey sludge into a vast lake.*