

From Data to Practice Change: Co-designing a Subject Dashboard That Enables Inclusive, Evidence-informed Teaching. *A Good Practice Report*

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Abstract

Higher education institutions are increasingly data-rich yet insight-poor, with learning analytics often experienced by academics as difficult to interpret and disconnected from everyday teaching practice. Transition pedagogy emphasises that intentional inclusive practice relies on educators having a clear, evidence-based understanding of their student cohorts, yet such visibility is rarely available at subject level. This paper reflects on the design, development, and sustained use of an institution-wide subject dashboard that makes cohort-level diversity, enrolment patterns, and longitudinal performance data visible and usable for subject coordinators. Co-designed with academics and grounded in human-centred design, learning analytics, and the Technology Acceptance Model, the dashboard supports sensemaking rather than reporting. Survey evidence and case examples illustrate how cohort visibility has informed reflective curriculum design, supported student transitions, and enabled inclusive teaching decisions, while also identifying challenges and future directions for institutions seeking meaningful pedagogical impact from analytics.

Keywords: Application of learning analytics; human-centred design; subject dashboards; inclusive design; inclusive teaching; transition pedagogy

Introduction

Higher education institutions serve increasingly diverse student cohorts, including students from varied cultural, linguistic, and socioeconomic backgrounds; first-in-family, mature-age, and part-time learners; and students entering through alternative pathways. Kift's (2025) transition pedagogy framework argues that supporting *all* students to engage and belong requires an intentionally designed learning environment grounded in a genuine understanding of cohort composition. Yet in practice, subject coordinators — academics responsible for the design, delivery, and evaluation of individual subjects (also referred to as units or modules in some institutional contexts) — typically have access to little more than a student name list. This leaves cohort diversity to be inferred through informal means such as icebreakers, intuition, or prior experience, rather than drawn from existing institutional data.

Learning analytics tools are increasingly available across higher education, yet adoption by subject coordinators remains persistently uneven. Despite significant institutional investment in data, tools are often perceived as complex, static, or disconnected from teaching decisions (Topali et al., 2025; Tsai et al., 2019). This challenge is not simply technical: research shows that academic uptake depends less on data availability than on how well tools support meaningful sensemaking, the process by which educators interpret information and translate it into pedagogical action (Li et al., 2021; Williamson &



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Kizilcec, 2022). When dashboards fail to support this process, they risk becoming reporting artefacts: consulted rarely, trusted less, and disconnected from the design decisions they were intended to inform.

Most learning analytics tools in higher education track individual student behaviour and learning management system (LMS) engagement (Paulsen & Lindsay, 2024). In Australia, analytics tools offer various capabilities. SNAPP (Social Networks Adapting Pedagogical Practice), developed at the University of Wollongong, visualises discussion forum interactions to identify students at risk of disengagement (Bakharia & Dawson, 2011). OnTask, developed collaboratively across the University of South Australia, UNSW Sydney, and the University of Technology Sydney (UTS), uses LMS activity data to trigger personalised student communications (e.g., Lim et al., 2023). The Student Relationship Engagement System (SRES), developed at the University of Sydney, enables personalised, data-informed outreach by teaching staff to individual students (Liu et al., 2017). Internationally, platforms such as Canvas Analytics and Brightspace Intelligent Agents (D2L) focus on activity logs, submission patterns, and access data at the individual student level.

The Subject Dashboard developed at UTS is based on a different premise. Rather than tracking individuals, the dashboard surfaces the structural characteristics of an enrolled cohort. These include enrolment trends up to and beyond the census date (the administrative deadline after which students incur fee liability and cannot withdraw without academic or financial penalty), entry pathways, demographic and linguistic diversity, repeat enrolments, and prior cohort academic performance. Data are refreshed daily. The dashboard is grounded in participatory design and human-centred interaction (HCI) principles and was co-designed with subject coordinators through iterative design and development cycles. Thus, it sits within what Williamson and Kizilcec (2022) identify as an underutilised dashboard category oriented towards equity, diversity, and inclusion where cohort visibility is understood as a precondition for responsive, inclusive teaching.

This good practice report describes the Subject Dashboard's design, development, and impact since 2016, drawing on technology acceptance theory and practice to frame academic uptake. Two interconnected bodies of literature contextualise the work reported here: transition pedagogy and inclusive curriculum design; and learning analytics, dashboard design, co-design methodology, and technology acceptance.

Transition Pedagogy, Cohort Diversity, and Inclusive Curriculum

Kift's (2009) original transition pedagogy framework, foundational to the updated framework cited in Kift (2025), establishes that "inclusive and intentional curriculum design – well-organised, well-sequenced and well-managed – is good curriculum design that benefits all students" (Kift, 2025, p. 9). Central to this framework is the principle that pedagogical decisions should respond actively to the diversity of the incoming cohort rather than designing for a typical student. Further, monitoring the "nuances and complexity of engaging increasingly diverse student cohorts" (Kift, 2024, p. 23) using data-driven evaluation provides an evidence base that is necessary to the cycle of curriculum improvement, rather than supplementary to it. When cohort diversity information is absent, the design inadvertently disadvantages first-in-family students, students from low socioeconomic backgrounds, students from regional and remote areas, and students from culturally and linguistically diverse communities (Arkoudis et al., 2013; Devlin, 2013). The gap between the cohort diversity information held in institutional systems and the information readily accessible to subject coordinators motivated the development of the Subject Dashboard in 2016.

Learning Analytics, Co-design, and Academic Uptake

Learning analytics has been defined as the measurement, collection, analysis, and reporting of data about learners and their contexts for the purpose of understanding and optimising learning (Siemens, 2013). The Society for Learning Analytics Research (2025) has since updated this to emphasise actionable insights that enhance learning and teaching, a shift from reporting towards impact that is central to the problem this paper addresses.

Despite significant institutional investment, analytics tools remain underutilised by the academics they are designed to support (Topali et al., 2025). Barriers include data literacy, time constraints, and tools designed for administrative rather than teaching purposes. Cohort-level data are frequently dispersed across enrolment platforms, student administration systems, and grade repositories, making them inaccessible to subject coordinators in an integrated or timely form (Tsai et al., 2019), and business intelligence tools are often too complex to navigate. Research on sensemaking identifies this as a problem of design, not merely access: dashboards surfacing contextualised, teaching-relevant information are more likely to support evidence-informed practice than those requiring substantial interpretive effort (Li et al., 2021; Lim et al., 2023).

Addressing this requires not just building a tool for academics but designing a tool *with* them. Participatory design holds that end users should be active co-designers rather than passive recipients, and tools co-designed with intended users are more likely to reflect authentic workflows and achieve sustained uptake (Konings et al., 2017). HCI design principles extend this, foregrounding usability, iterative testing, and ongoing user-informed refinement as core design commitments rather than post-hoc quality checks (Jivet et al., 2020). Both traditions informed the Subject Dashboard's design and each subsequent iteration.

Designing a useful tool is necessary but not sufficient for academic engagement. The Technology Acceptance Model (TAM; Davis, 1989) and the Unified Theory of Acceptance and Use of Technology (UTAUT; Venkatesh et al., 2003) explain why available tools are not always adopted. Both TAM and UTAUT highlight *perceived usefulness* (the extent to which a user believes a tool will improve their performance), and *perceived ease of use* (not requiring too much effort). UTAUT also includes *social influence* (the influence of important others' expectations) and *facilitating conditions* (including support and infrastructure). Granić and Marangunić (2019) verify the validity of TAM and its variations for technology adoption within an educational context, and Rienties et al. (2018) adds *peer engagement* and *professional development*. These dimensions informed the uptake strategies and evaluation of academic engagement described later in this paper.

Design and Development

The Subject Dashboard and its Pedagogical Goals

The Subject Dashboard is a university-wide application accessible to subject coordinators, course coordinators, faculty teaching and learning staff, and learning designers, with access scoped to subjects relevant to each user's role. The data are refreshed daily and include three years of data by teaching session, with the current session as the default view. The interface comprises a Welcome screen and Summary, Enrolment Flow, and Past Results screens. These are aligned to four pedagogical goals that frame the dashboard's design: (1) understand cohort diversity to inform inclusive curriculum design, (2) track subject enrolments through to the census date, (3) analyse student performance following session completion, and (4) evaluate the impact of curriculum or learning design changes over time.

Summary screen (Goal 1). The Summary view (Figure 1) surfaces cohort diversity by presenting admission pathways, degree and major composition, citizenship and language background, gender, and age profile alongside headcount and indicators for continuing and repeat students. This prompts subject coordinators to consider how cohort characteristics should shape learning design and student support decisions.

Enrolment Flow screen (Goal 2). The Enrolment Flow view provides daily snapshots of headcount, enrolments, and withdrawals through and shortly beyond the census date. This enables subject coordinators to anticipate cohort scale, plan staffing and learning activities, and monitor emerging enrolment and withdrawal patterns in real time.

Past Results screen (Goals 3 and 4). The Past Results view presents grade distributions disaggregated by admission pathway, citizenship, and language background. This enables subject coordinators to compare outcomes across sessions, identify groups experiencing differential success, and evaluate the impact of pedagogical or assessment changes, going beyond LMS grade records to support longitudinal, evidence-informed curriculum reflection.

Together, these screens provide subject coordinators with an integrated picture of the cohort information required for responsive, inclusive curriculum design.

Figure 1

Subject Dashboard Summary Screen for an Undergraduate Subject: (a) *Enrolment Trend*; (b) *Basis of Admission*; (c) *Course Composition*; (d) *Cohort Background (Domestic/International, English-speaking Background)*; (e) *Age and Gender Profile*



Origins and Co-design Methodology

The Subject Dashboard originated in 2016 as a special project led by the First-Year Experience team, with the explicit goal of enabling subject coordinators to embed Kift's (2009) transition pedagogy into their curriculum design by making cohort diversity data accessible and actionable. A cross-functional team spanning learning analytics, data quality, information technology (IT), interaction design, and first-year academics was formed to co-design the prototype, ensuring that the data, visualisations, and navigation reflected authentic teaching workflows and genuine decision-making needs.

Early testing in 2016 confirmed that the prototype successfully supported understanding of student cohorts and pedagogical reflection. Academics described it as intuitive and practically useful. One noted it gave "simple access and rich visualisations to data on students which is usually unwieldy and difficult to utilise". Another described using it "to gain overall picture of the class ... monitor the subject outcomes and their historical development to assess the efficacy of the subjects' delivery and the effectiveness of the pedagogical approaches". Following a broader trial across undergraduate and postgraduate subjects in 2017, the dashboard was formally approved and made available for all faculty-run subjects in 2018.

Over the following years, the Subject Dashboard evolved through enhancement requests and iterative refinement cycles, though early technical limitations constrained uptake. A transition to Microsoft Power BI at the end of 2023 addressed most of these limitations, delivering immediate access, daily data refresh, richer interactivity, and expanded export capability, although the dashboard was still not integrated with the LMS.

Growing interest and uptake by subject coordinators triggered a new cycle of enhancement requests, reinforcing the iterative co-design approach. Several requests were implemented in 2024–25: the inclusion of repeat-student data; expanded course and major information; and extended access to previously taught subjects, which was particularly valuable for team-taught

subjects. Longer-term requests including equity background indicators (first-in-family, low socioeconomic status), cross-subject and prerequisite linkage, and forecasting views remain under consideration, with equity cohort indicators currently constrained by small cohort sizes, identifiability risk, and data availability.

Engagement Strategy

It took considerable time to get academics engaged. In 2018, subject coordinators were sent a weekly email containing an updated data file to embed into a web browser. This would then reveal the Subject Dashboard. This process created a technical barrier, so early engagement was largely limited to those with the necessary technical skills and persistence. By 2020, the Subject Dashboard was accessed via a weblink on the UTS virtual private network (VPN). The project lead ran frequent information sessions drawing on use cases that academics could demonstrate. Senior leaders in faculties welcomed the information sessions, but success was still limited due to perceived difficulty in both access, and with learning ‘*yet, another dashboard*’. From 2022, webinars, videos, and associated blogs were introduced to showcase practice. Only after the dashboard was released in Power BI in 2024, and interest in its use increased, did the team recognise the alignment of their evolving practice with the TAM and UTAUT (Davis, 1989; Venkatesh et al., 2003) within an educational context. The five dimensions outlined below emerged as important in the engagement strategies the team used and the evaluative lens through which academic engagement was assessed over time.

Ease of use. The transition to Power BI in 2023–24 directly addressed early limitations in interactivity, accessibility, and data refresh speed. In a 2024 survey of subject coordinators ($N = 25$) on the new interface, the majority rated navigation as easy/very easy (84%). The usability of the Summary, Enrolment, and Past Results screens was rated positively by 92%, 88%, and 84% of respondents, respectively. Coordinators most commonly reported that the new interactive and export capabilities provided greater insight into cohort diversity and trends for pre-session planning and monitoring and facilitated comparison of grade distributions by cohort.

Usefulness. In 2025, a survey to assess five information quality indicators was sent to 268 academics who had used the dashboard over the previous 12 months. The survey was completed by 18 academics (~7%). Respondents agreed or strongly agreed with the dashboard’s Relevance/Usefulness (88.9%), Accuracy (83.3%), Completeness (83.3%), Clarity/Presentation (83.3%), and Timeliness (66.7%). The lower Timeliness rating indicated that not all users were aware of the daily data refresh cycle. This finding was acted on by explicitly addressing data timeliness in webinars and supporting blog content. Feedback from webinars, surveys, and emails consistently confirmed that the dashboard successfully translates complex institutional data into a simple, actionable interface covering cohort composition, enrolment flow, and grade distributions for each coordinator’s set of subjects and students.

Facilitating conditions and capability. Capacity-building webinars provide structured pathways for academics to locate their dashboards, interpret visualisations, engage in sensemaking with peers, and connect data insights to teaching decisions. These structures (webinars, blogs, videos) and a dedicated Teams channel are key to sustaining engagement.

Social influence, peer engagement, and professional development. A community Teams site that includes all subject coordinators provides an ongoing channel for peer norming and shared practice examples. Colleagues promote the dashboard among peers and present dashboard-informed outcomes at course meetings, while external interest through communities of practice and benchmarking has extended the tool’s reach beyond the institution.

Communication. The project lead is regularly invited to present the dashboard to faculty groups, and blogs, webinar recordings, and faculty presentations are used to normalise use and build capability across the institution. An iterative development roadmap, publicly informed by user feedback, signals institutional commitment to the tool and sustains academic trust in its relevance. Senior institutional endorsement has reinforced this. The dashboard has been described as “a powerful initiative that fundamentally enhances the university’s approach to teaching and student success ... an essential resource for academics seeking to gain deep insights into student outcomes, reflect on teaching practice, and adopt evidence-based strategies that promote inclusive design” (personal communication, Associate Dean, Teaching and Learning, Science, 2025).

Evidence of Impact

Academic engagement with the Subject Dashboard has produced evidenced changes in curriculum design, student support, and teaching practice across faculties and subject types. Drawing from survey responses and structured consultations, we illustrate four diverse approaches (vignettes) to demonstrate the range and depth of pedagogical impact.

Vignette 1: Inclusive Design and Targeted Support (Information Systems)

A coordinator of an information systems subject used the dashboard to analyse cohort diversity each semester and support proactive design of learning experiences that strengthened student transitions. When data revealed a significantly higher proportion of international students in one offering, the coordinator restructured delivery with scaffolded content, simplified instructions, used multimodal explanations and peer-based collaborative activities and established optional weekly drop-in sessions to improve achievement and retention. In a subsequent offering, insights about graduate certificate students with strong Australian industry experience informed the co-creation of a student-led discussion forum seeded with local industry resources. This evolved into a peer-driven learning community addressing international students' desire for Australian context while promoting collaborative learning. Used alongside LMS analytics, the dashboard enabled timely, targeted interventions throughout the semester.

Vignette 2: Redefining Student Excellence and Disengagement (Mechatronics)

The coordinator of a large first-year mechatronics subject used the dashboard to replace assumptions about student excellence and disengagement with targeted evidence-based support. Visual data on cohort composition and grades revealed a bimodal pattern: mechatronics majors for whom the content aligned increasingly achieved high distinctions while mechanical engineering majors experienced rising fail rates and the middle band (pass to distinction) shrank. To support a scaffolded transition into the subject, the coordinator introduced orientation activities, transparent rubrics, checkpoint tasks before and after census, and targeted skill clinics to strengthen achievement. The repeat-student list enabled early, supportive outreach tailored to needs, from skill-gap workshops to workload adjustments. Subsequent offerings saw most second-attempt students pass, high performers stay strong, reduced fail rate, and increased pass rate. The dashboard now anchors a pre-, mid-, and post-session routine so evidence, not assumptions, drive inclusive design in this gateway subject.

Vignette 3: Using Cohort Trends to Adapt Contextual Support and Build Belonging (Nursing)

A coordinator of a large first-year nursing subject used the dashboard to anticipate emerging learning needs with changing cohort populations. Shifts in international enrolments, a younger cohort profile, and repeat-student information informed adjustments that strengthened transitions, including adding material and redesigning learning activities to enhance engagement. The cohort data visually represented on the summary screen were shared with students to normalise diversity, foster belonging in the large tutorials (up to 170 students), and connect students to content when learning about epidemiology and demographics. The enrolment flow was monitored to tailor communication with students and indicate whether strategies were having an impact on student retention.

Vignette 4: Using the Subject Dashboard for Course Review (Indigenous Studies)

The subject coordinator of an elective subject used the dashboard to review characteristics and trends of cohorts enrolled in variations of the subject. The Indigenous studies subject was offered in three formats: an eight-credit-point, 12-week subject; a six-credit-point, 12-week subject; and a two-credit-point, six-week subject, with each attracting distinct student cohorts. The eight-credit-point version typically enrolled non-commencing, mainly domestic students, who were mostly female and studying communication or law, while the six-credit-point version enrolled nearly 50% commencing students. The two-credit-point version was taken primarily by non-commencing business and engineering students. Review of dashboard pass-rate data across the previous three years showed students in the eight-credit-point subject were consistently more successful than those in the other two formats of the elective. Based on these data, the curriculum committees were convinced to remove the six-credit-point subject and review the content of the two-credit-point subject to be more suitable for students in the disciplines of engineering and business.

Patterns of Use Across the Evidence Base

These cases show a progression in dashboard engagement consistent with the TAM. Most new users begin with the Summary screen prior to session commencement, reviewing enrolment composition and tracking changes through to census. Further

engagement involves drawing on Past Results data to inform targeted teaching strategies and identifying cohorts with particular support needs. A growing group combines dashboard data with LMS analytics, 2025 survey evidence, and Past Results to evaluate intentional curriculum or assessment changes, making sense of data for evidence-informed practice change.

Transferability: A Model for the Sector

The Subject Dashboard is transferable and adaptable to institutions seeking to move from data reporting to genuine practice change. The literature-grounded principles outlined earlier are essential starting points: addressing the challenge of academic uptake, making cohort diversity visible to inform inclusive design, and using technology acceptance principles as a framework for sustained engagement. Linden et al. (2025) identified access to quality subject-level cohort data as a key element of their Transition Framework. Considering their regional university context and very diverse student backgrounds and performance levels, and paralleling the work at UTS, they iteratively developed a “meaningful demographic and learning analytics” dashboard for unit/subject coordinators (Linden et al., 2025, p. 71). Peer reviews from two external teaching and learning leaders validated the usefulness and transferability of the dashboard approach: “The UTS Subject Dashboard is a transformative resource that empowers academic staff with timely, accessible, and actionable insights into their student cohorts” (Peer Review 1, 2025); “The UTS Subject Dashboard is both useful and original, offering a model that could inform future developments at the University of [X]” (Peer Review 2, 2025).

Several features of dashboard design and development appear critical regardless of institutional scale or platform: co-design must begin with academic requests rather than data availability; interaction design should privilege interpretability and narrative over raw tables; pedagogical goals should be legible through interface design; the platform must enable rapid iterative enhancement; sensitive equity indicators require alignment with institutional policy; and a structured engagement program (webinars, peer exemplars, capability building, blogs) is essential. Institutional readiness across four areas shapes success: data infrastructure supporting daily refresh from multiple systems; a cross-functional design team spanning analytics, data quality, IT, interaction design, and academic practice; academic champions and subsequent networks normalising use through peer influence and requests; and alignment with institutional teaching and learning practice, equity and student (transition) success priorities.

Five recommendations follow. First, learning analytics teams should prioritise usability and pedagogical relevance over data comprehensiveness. Second, curriculum designers should embed dashboard use within curriculum design at all stages — pre-session planning, mid-session monitoring, post-session reflection. Third, subject coordinators should begin with using available information on the diversity of their student cohorts before session commencement, when cohort awareness has the most direct impact on inclusive design. Fourth, institutional leaders should treat cohort-level analytics as equity infrastructure requiring sustained investment, not one-off deployment. Fifth, institutions seeking to improve student transition, retention, and success through learning analytics should treat dashboards as sociotechnical systems: adoption depends on usability, trust in information quality, and visible pathways from insight to action.

Conclusion

The Subject Dashboard demonstrates how an institution can move from being data-rich but insight-poor to offering genuinely evidence-informed teaching. Co-designed with academics since 2016, it surfaces cohort-level diversity and performance data — enrolment flows, demographic characteristics, and longitudinal grade trends — in a form that enables subject coordinators to design inclusive, responsive curricula rather than rely on assumed understandings of their cohorts. Grounded in participatory design, HCI design, and the TAM, the dashboard has achieved strong and sustained academic uptake, with survey data and vignettes demonstrating measurable pedagogical impact across faculties. In facilitating impactful pedagogical development, it supports Kift’s transition pedagogy as everyday practice: “student success is not left to chance” (2009, p. 15).

The model is easily transferable. Its effectiveness depends not on technical sophistication but on academic ownership of the design process, trust in information quality, and sustained investment in capability building and peer norming. Future development will focus on broadening equity indicators, expanding cohort-level grade distributions, and developing cross-subject views for program-level planning, priorities driven by the same co-design processes that have sustained the dashboard’s relevance since inception.

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