The interface between learning analytics, IR and pedagogy in designing effective interventions

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INTRODUCTION

- This paper conceptually explores the interface between learner analytics, institutional research functions and pedagogy in designing more effective student support systems
- The paper will explore the role of IR professionals in the process of identifying, profiling at-risk students and developing interventions aimed at mitigating risk factors.
- Using the principles of action research to develop a role repertoire that increases the likelihood of assimilation of new practices and information within the institution.

INTRODUCTION

- The role of IR continuously evolving
  - Primarily need driven within institution
  - Responsive/Reactive model

- The role of IR professionals in supporting teaching and learning continues to evolve as student profiles, needs and expectations shift within the broader context of increasingly constrained higher education institutions.

ORGANISATIONAL INTELLIGENCE

- Terezini's (1993) three tiers of organizational intelligence is widely used as a taxonomy of the professional and personal competence, institutional knowledge and experience necessary for an effective IR (Visser & Barnes, 2016).
- The three tiers are technical, issues intelligence and contextual intelligence. Each tier builds on the skills and knowledge of the preceding tier and the tiers are viewed as independent (Volkwein 2008, p.6).

ORGANISATIONAL INTELLIGENCE

- Technical or analytical intelligence focuses on knowledge about data structures, data elements, operational definitions and rules (Visser & Barnes, 2016).

ORGANISATIONAL INTELLIGENCE

- Issues intelligence encompasses both substantive and procedural aspects where the substantive component relates to the major problems facing an institution *(ibid)*.

ORGANISATIONAL INTELLIGENCE

- The procedural component focuses on the institution functions and the way decisions are made which includes the informal power structures and cultural practices at the institution *(ibid)*.

ORGANISATIONAL INTELLIGENCE

- Contextual intelligence involves an understanding of the culture and history of the institution within the larger history and context of the higher education system (Visser & Barnes, 2016).

THE ROLE OF IR

- The traditional role of IR, according to Terezini (1993) and Volkswein (2008), is seen as providing reliable information and evidence that supports decision making, governance and quality management.
- The role of IR in improving or supporting teaching and learning outcomes remains relatively understated with greater emphasis placed on strategic decision making.

THE ROLE OF IR

- Lillibridge et al. (2012) IR work tasks:
  - Approximately 1451 tasks extracted from IR Job descriptions from 43 job descriptions
  - The size of the department/unit influences the focus of the unit
    - Smaller units more likely to focus on institutional statutory reporting, data management, trend reporting and accredition.
  - Student success
    - 5 tasks
      - Limited application across surveyed participants
      - Only exceptions were:
        - » recommendations for best ways and methods to impact existing student operation among 0FTE group.
        - » Developing models to improve student retention among the 4-6FTE group

THE ROLE OF IR

- A 2016 study by Muller, Langa and Dlamini explored the perceptions of staff in IR units in relation to the role that IR should play.
- The core role of IR was seen as reporting, a position supported by Terezini (1993) and Volkswein (2008). The respondents in this study argued against a shift to more collaborative research approaches in favour of the perceived core function.

THE ROLE OF IR

- Arguably, the core focus of most institutions is the teaching and learning processes. With the emphasis at strategic decision making, the question should be raised about what informs the decision making of academics and students who directly engage in the teaching and learning process.

A SHIFT IN CONTEXT

- Higher education in South Africa

- Technology
  - Increased access to computing power, storage and reporting software
    - Will minimize the need for human intervention in the collection, processing and reporting on institutional data over time
      - Smaller teams with increasingly specialized skills will become the norm.
  - Staff and student behavior increasingly shifting online
    - The data ecology of research participants increasingly accessible
    - Sporadic shifts in South Africa where mediated by SES

- Socio-cultural
  - Changes in legislation (POPI, GDPR)
  - Changes in awareness on the value of personal data
  - Changes in the assumptions of neutrality about algorithms (e.g Purdue, Google, Amazon)

A SHIFT IN CONTEXT

- The notion of student success as a complex process that is premised on the concept of fit between student, institution and the larger context has gained increasing.
- Authors such as Swail (2007), Kuh, Kinzie, Buckley, Bridges, and Hayek (2007) and Subotzky and Prinsloo (2011) emphasise the development of contextualised notions of student success and risk where the emphasis shifts away from a deficit oriented understanding of student risk which locates risk solely within the student.

A SHIFT IN CONTEXT

- This shift towards institutional emphasis requires institutions to develop greater contextual awareness and develop a deeper understanding of the interaction between institution and student to develop relevant intelligence to inform decision making at the point of interface between student and institution.
- Depending on the structure and location within the organisation, IR units are uniquely positioned to identify cross boundary trends, patterns and relationships that could provide insight into the underlying factors that drive success outcomes at institutions.

A SHIFT IN CONTEXT

- Tait (2003)
- With the rise in OER's, MOOC's, OpenCoursware (eg. MIT), standardization of qualifications, the university as knowledge repository is slowly eroding.
- The university as the facilitator of learning is growing in demand
- Student support, the learning experience and student satisfaction are becoming the main drivers in student choice of institution

IR PRACTICE RE-IMAGINED

- Winter (1989) identifies six key principles that guide the research process toward achieving collaborative goals within a larger system or community.
  - reflexive critique
  - dialectical critique
  - collaborative resource
  - risk
  - plural structure and,
  - theory, practice, transformation (O'Brien, 1998).

- These principles position the researcher as a collaborator, facilitator, negotiator and resource node.

IR ROLES FOR TEACHING AND LEARNING

Advocate

- Strategic advocacy for the benefit of students
- Integrating student perspectives into the conceptualization of research
- Leveraging neutrality and access to top management to shape institutional direction

Translator

- Contextually link faculty to their data
- Explicate the assumptions underlying of data
- Test institutional assumptions about students

Collaborative Resource

- Facilitate links between institutional processes
- Data clearing house tailored to needs of various levels of decision making

Case study: Students with disabilities

- Focus on students with dyslexia
  - Two reasons
    - My background in psychology
    - The discourse of hidden disabilities
      - People with “hidden disabilities” often neither see themselves, nor are seen as “properly” disabled and are therefore less likely to seek or be offered assistance as they are not seen as deserving of support (Fuller et al, 2004)

Case study: Students with disabilities

- Students with dyslexia report experiences of:
  - Not having the relative workload recognized
  - Working harder than non-labelled others
  - Generating products non-commensurate with the workload
    - » Denhart, 2008

Case study: Students with disabilities

- What are the options for assisting students with dyslexia?
  - Which policies provide for providing additional support
  - What existing teaching and learning practices are available to ensure infused support
  - What assessment practices are better suited for assisting students with dyslexia

Case study: Students with disabilities

- But first and foremost:

- Have we spoken to the student about what support they'd need?

Policy environment

- Progression/admissions policy – how does it impact on students with dyslexia?
  - Fewer modules per year to manage course load
- Assessment policy – alternative assessment strategies to enable optimum conditions for students
  - Non venue based examinations
  - Oral examinations (for certain forms of dyslexia)

Identifying support strategies

- Teaching and learning support phase makes provision for
  - Tutorial support
    - Face to face tutoring on high risk modules
    - E-tutoring makes provision for asynchronous communication with course instructors
  - Developing podcasts and other multimedia for alternative content provision
  - Developing study strategies in collaboration with students derived from scientific research on dyslexia
  - Psycho-social interventions to manage self-concept and self-efficacy (Denhart, 2008)

But is it enough?

- Learning analytics provides us unprecedented access to student and institutional data
  - However, data cannot speak for itself (Prinsloo et al, 2015)
- Ethical use of analytics should be foregrounded
  - The purpose for the analytics
  - Transparency on the collection and analyses procedures followed
  - Responsible provisioning of the data to both academics and students

But is it enough?

- The use of learning analytics for student support would require a synthesis of data and effective theories on student success
- Student support services are essential to student success and cannot remain an after thought in the teaching and learning process (Tait, 2000)
- Students with disabilities remain on the fringes of HEIs awareness; challenging the normative assumptions embedded in institutional practices are essential.

Concluding remarks

- The shift to a collaborative approach to IR may be the key to driving sustained change within institutions
- The shifting context of Higher Education requires a change in orientation to traditional approaches in IR
- Sustained change in IR will require greater formalisation in the development of expertise in the field
- The inclusion of clients

Conclusions

- Big data allows for identifying typically overlooked population groups
  - However, this requires:
    - an understanding of cultural and ideological biases embedded within institutional practices
    - A willingness to deviate from the norms to challenge assumptions about the student body
    - A shift to a critical analytics

Thank you

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