

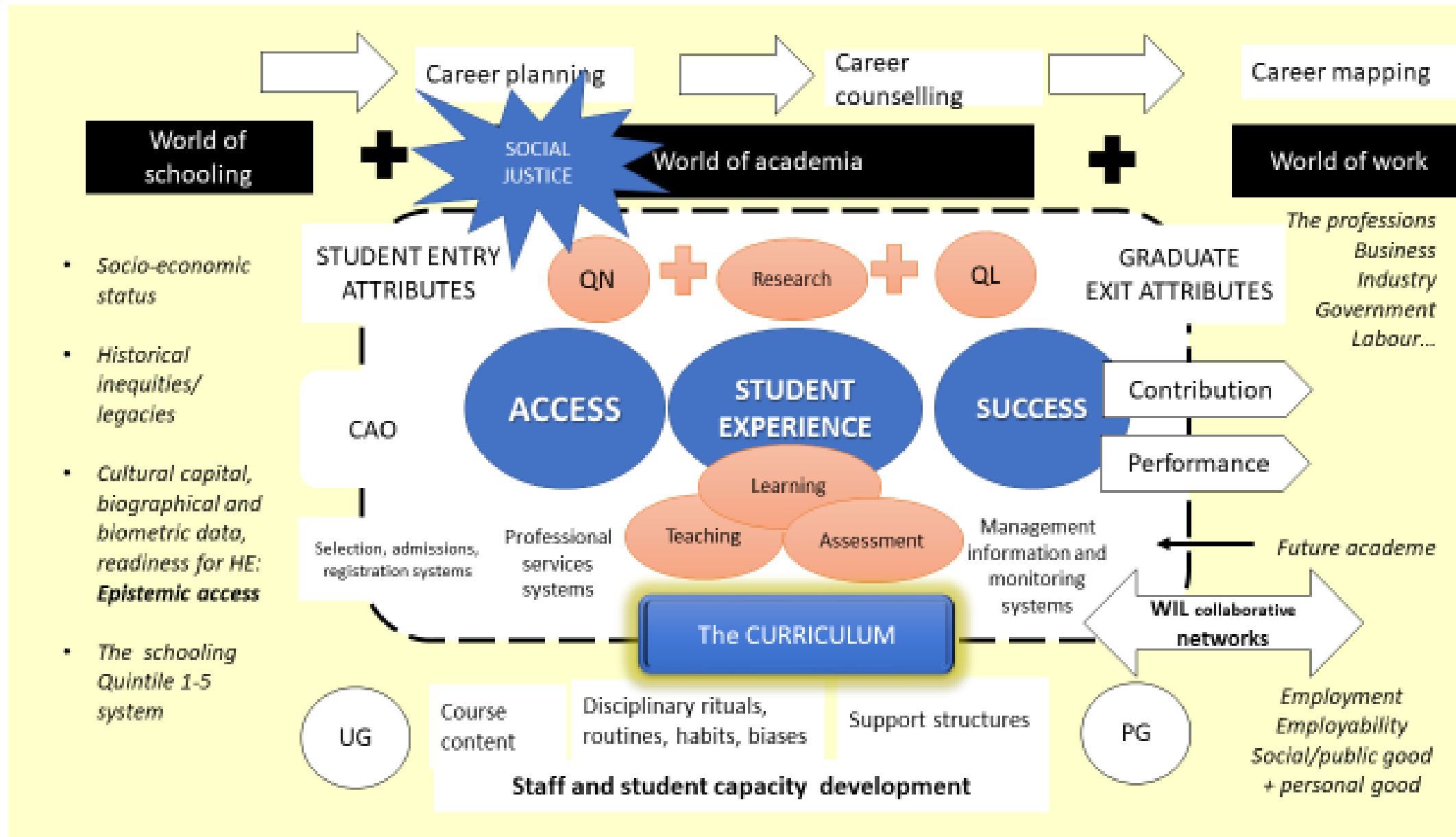
UNIVERSITY OF  
KWAZULU-NATAL™  
INYUVESI  
YAKWAZULU-NATALI



# Siyaphumelela Convening

March 2023

# Access and Success Advisory Forum (ASAF) Conceptual Framework



# Highlights (since last update)



- **Professionalising Academic Advising:** Progress made in establishing Academic Advising Units in each College
- **Instructional Design Unit established:** 5 Instructional Designers appointment- focus on curriculum re-design for student success and learning pathways
- **Assessment Support Group (ASG)** – launched - various projects in process
- **First Year Experience:** Programme Development, Curriculum and Materials Design Completed and has being piloted – results imminent
- **Student Epistemic Access and Success-**Collaboration with University of Johannesburg in process
- **SASSE/LSSE** Engagement in progress: Encouraging findings
- **UTOP & ULOP** – Portals to enhancing access and success
- **Data Analytics Support Group:** Friday meetings – research groups engage with “critical friends” – projects now producing data
- **T & L Community Engagement** initiatives to promote student access and success
- **2023 Data Analytics Week:** Various training activities and consultations with Prof Victor Borden
- **2023 ASAF Symposium:** Scheduled for 23 March – open invitation to Siyaphumelea Network
- **2022 UKZN E-Learning Symposium:** Forum for disseminating Siyaphumelela/ASAF projects – upscaled to a conference in 2023

# Recent Initiatives to Enhance Access and Success

## SOTL Communities of Practice

- After hosting the E-learning symposium in 2021 and 2022, it has evolved to a conference in to be hosted in September 2023. The **innovations in the Scholarship of Teaching and Learning (iSoTL)** conference.

## Academic Integrity

- An online “**Understanding Plagiarism**” course for all students has been developed to capacitate students. The online course exposes students to practical examples and content on the do’s and don’ts of academic integrity.

## Digital Transformation Initiatives

- **Digital Teaching and Learning Platforms** - The UKZN **Teach online Portal (UTOP)** and **Learn Online Portal (ULOP)** portals serve as a hub for teaching and learning applications and systems that enhance the student and lecturer experience. can now be accessed via <https://utop.ukzn.ac.za> & <https://ulop.ukzn.ac.za>.
- **Student digital competency survey** – an instrument to measure students’ digital competency level is administered in the first-year experience online course. The insights from the data analysis will inform a personalised approach to providing support to students.
- **ACTive Teaching Online Course** – is an online course for lecturers to learn and experience how to design and deliver engaging online and blended courses to improve students’ learning experiences.

## Online Courses for Academic Monitoring and Support Tutors

- In ensuring that students get the best out of their tutorials and other types of academic support, online training for the tutors, teaching assistants, and academic development officers are now available.

## Community Engagement

- **My DigiTutor** – is a partnership with UKZN **Enactus**. The project is a student-led digital tutoring initiative geared towards improving access to higher education by providing tutoring, career guidance, mental health and assistance with CAO & NSFAS applications to matric students.
- **ELET** – UTLO is in partnership with Environment and Language Education Trust (ELET), an NGO that impacts development and transformation through Accredited Skills Training, Environmental, Teacher and Learner Empowerment and Employment Creation Programs, emphasising marginalised and vulnerable Women and Youth.

# Instructional Design

2022 HIGHLIGHTS

## Responsibilities



## Collaboration

- Feedback & Revision.
- Support

## Development

- E-learning material.
- Toolkits

## Marketing

- Networking
- Content Creation

## Training

- Workshops
- Professional improvement

## Creating Awareness



PMB



EDGEWOOD



WESTVILLE



HOWARD



MEDICAL

### ID Expo

**80%** Campus-wide Expo Events hosted  
**374** Instructional Design Interactions

### ID Website & Workshops

**39** Hours of Group Online Workshops  
**42** Hours of 1-on-1 Engagement  
**49** Digital Champions Networked

## Developing Resources



**Student Engagement,  
User Experience &  
Taxonomy**

**9** Pedagogy Toolkits



**WordWall, H5P, Padlet,  
Mentimeter, Flip Grid,  
Kahoot & EdApp.**

**6** EdTech Toolkits



**4** Design Toolkits

## Module Transformation

**10 X Courses**



**CAES**

**30%**

**CLMS**

**25%**

**CHS**

**25%**

**CHUM**

**20%**

# Access and Success Advisory Forum (ASAF) Research Projects

	Project Title	Team Leader
1.	Graduate Attributes	Prof Nirmala Gopal
2.	Curriculum redesign for academic success	Prof Labby Ramrathan
3.	Activating and engaging the student voice	Ms Sethu Nguna
4.	At-risk identification & At-Risk Advising	Prof Randhir Rawatlal
5.	Students' Attitudes Towards E-learning	Prof Msizi Mkhize
6.	Student and staff expectations and experiences of student success	Prof Sadhana Manik
7.	Cum Laude Tracking	Dr Samukelisiwe Khumalo
8.	Entrenching the "blended" into blended learning	Mr Ashwin Manival
9.	Blended Integrated Student Support and Engagement	Prof Sinegugu Duma
10.	Innovations in transitioning to remote/online assessments	Dr Upasana Singh

- **Initial approach: Identified core areas, but also** outline framework & resources (access to analysis) – invite broader participation
- **8 main themes with 12 projects:** Ambitious, but creation of teams & high energy leaders; expected some projects to vanish
- **Feedback from Kresge/Saide**
- **ASAF Alignment with Siyaphumelela goals**
  - **Flagship:** Cum Laude, At risk identification, Assessment
  - **Continuing:** Student Voice, Curriculum Re-Design,
  - **Less aligned but potential:** Grad attributes, E-Learning, Expectations, Blended Learning
- **Still have 10 active,** with 7 completing data collection / analysis
- **High levels of collaboration;** most projects multidisciplinary, often representation from 3 or more different colleges
- Emphasis on operationalising

# Professionalizing Academic Advising @UKZN

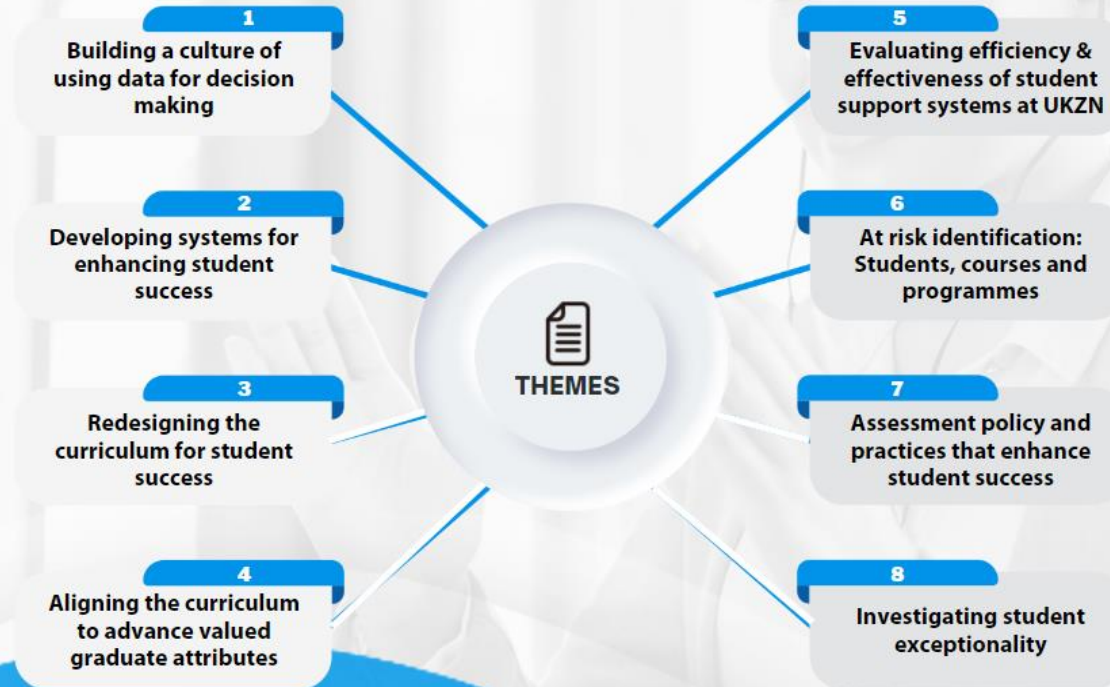
- Academic Advising (AA) Advisory Group established
- Establishing AA Unit in each College within the portfolio of the Dean of T & L.
- Mapping the International “AA” framework and models – completed – UFS Model adopted
- UKZN situational Analysis in progress
- 2 day workshop scheduled:
  - a) (Day 1) long-term strategy and planning
  - b) (Day2) AA Training for AMS and allied staff - designed and conducted by the AA Task Team

# ACCESS AND SUCCESS

## SYMPOSIUM

Hosted by the UKZN Access and Success Advisory Forum (ASAF)

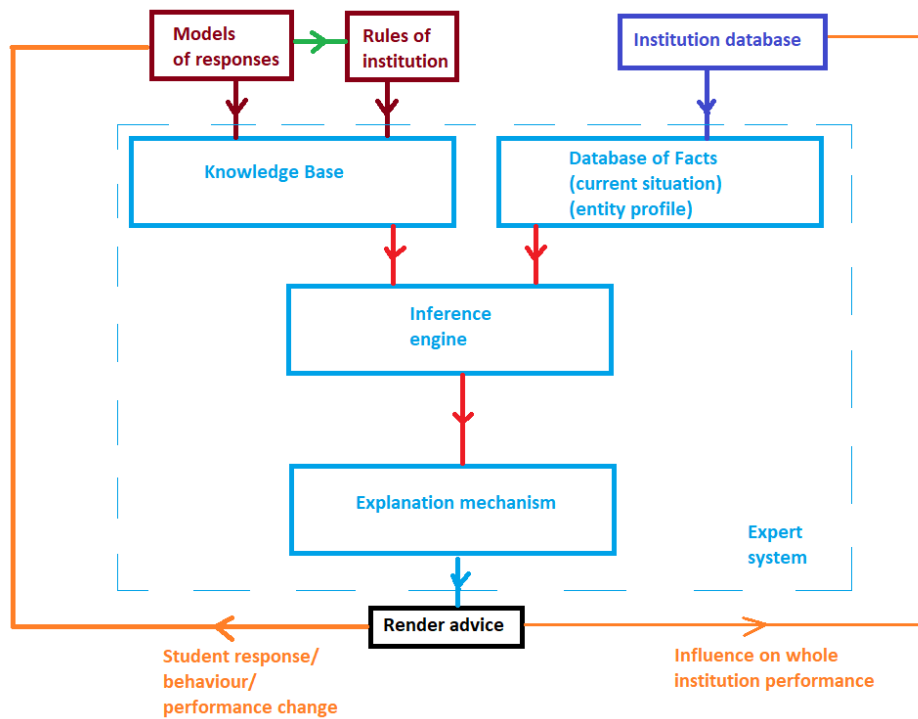
This Symposium provides a platform for the UKZN Access and Success Advisory Forum (ASAF) to present their Institutional research projects, designed to understand and enhance student access and success in higher education.



**PROFESSOR  
VICTOR M. H. BORDEN**  
Indiana University Bloomington



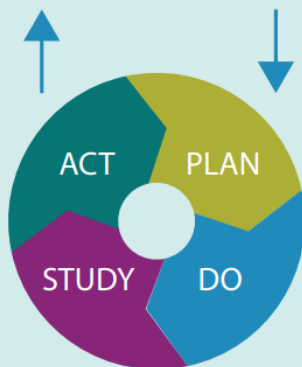
# ASAF Flagship projects



## Advising at Scale

- ❖ Focussed custom advice to the person logging in (student, lecturer, support, leadership)
- ❖ Original advising – few safeguards, strong progress, contextualised
- ❖ To serve whole institution, move to more generalised
- ❖ Focus on action/intervention rather than analytics for own sake

What am I trying to accomplish?  
 What changes can I make and why?  
 How will I know the change is an improvement?



# Whole-institution Advising

- Course information
- Programme information
- Time to grad
- Programmes at risk
- Student bio-correlations

7014

Students enrolled in 2013

19%

Completed on time  
29% grad. in extra time

52%

Have not graduated to date

8403

Students enrolled in 2014

21%

Completed on time  
28% grad. in extra time

51%

Have not graduated to date

M+0, M+1, M+2 vs. firstYear

Year	M+0	M+1	M+2
2013	1350	950	500
2014	1750	1250	550

Settings

Programme duration (years):

First year of registration:

Year of degree completion:

facultyCode:

collegeCode:

Academic programme performance

Sort by: Min time to grad Dropout rate Number of fail events

Click on a programme code to view report

BENG-CHEM, grad in min: <b>45</b> , not grad: <b>20</b> , fails: <b>33</b>
BENG-CIV, grad in min: <b>21</b> , not grad: <b>45</b> , fails: <b>31</b>
BENG-MECH, grad in min: <b>40</b> , not grad: <b>7</b> , fails: <b>38</b>
BENG-ELEC, grad in min: <b>57</b> , not grad: <b>0</b> , fails: <b>26</b>
BENG-ETRN, grad in min: <b>41</b> , not grad: <b>17</b> , fails: <b>53</b>
BENG-COMP, grad in min: <b>47</b> , not grad: <b>12</b> , fails: <b>52</b>
BSC-MATH, grad in min: <b>180</b> , not grad: <b>3</b> , fails: <b>20</b>
BSC-STAT, grad in min: <b>111</b> , not grad: <b>56</b> , fails: <b>13</b>
BSC-COMP, grad in min: <b>154</b> , not grad: <b>59</b> , fails: <b>15</b>
BSC-PHYS, grad in min: <b>175</b> , not grad: <b>6</b> , fails: <b>23</b>
BSC-BIO, grad in min: <b>164</b> , not grad: <b>0</b> , fails: <b>21</b>
BSC-ZOO, grad in min: <b>191</b> , not grad: <b>0</b> , fails: <b>25</b>
BCOM-ACC, grad in min: <b>395</b> , not grad: <b>0</b> , fails: <b>31</b>
BCOM-TAX, grad in min: <b>445</b> , not grad: <b>0</b> , fails: <b>26</b>
BCOM-FIN, grad in min: <b>415</b> , not grad: <b>0</b> , fails: <b>34</b>
BCOM-ECO, grad in min: <b>306</b> , not grad: <b>89</b> , fails: <b>20</b>
BCOM-BUS, grad in min: <b>276</b> , not grad: <b>88</b> , fails: <b>25</b>
BCOM-LED, grad in min: <b>334</b> , not grad: <b>46</b> , fails: <b>23</b>
BMED-PHYSIO, grad in min: <b>78</b> , not grad: <b>5</b> , fails: <b>27</b>
BMED-DENT, grad in min: <b>69</b> , not grad: <b>16</b> , fails: <b>11</b>

Programme comments

**BENG-CHEM**

Unusually low graduation rate (0.352) of minimum-time graduates (45/128).

Time-to-grad profile

Time to Grad	gradRate
Min + 0	0.35
Min + 1	0.35
Min + 2	0.14
Min + X	0.16

Programme auto-advice

⚠ **Poor level of executive advising**

BENG-CHEM could benefit from more advice from the executives.

30.08.2022 06:47:55

🌱 **Good grad rate**

Students are graduating without taking much extra time in BENG-CHEM. Well done to the programme managers!

30.08.2022 06:47:55

- Programme message editor
- Programme auto-messenger
- Alternative message editor

## Fewer tries needed to pass

Relative few tries needed to pass NGCH111

30.08.2022 06:50:52

## Poor rate of attendance

Poor rate of attendance in NGCH111

30.08.2022 06:50:52

## High number of complaints

Several complaints received

30.08.2022 06:50:52

### Issues identified in programme courses

MATH131, semester 1, 100 students, passrate: 0.44  
Low min result mean (47.79)  
Several attempts required to pass this course (1.86)

ENCH1EB, semester 2, 100 students, passrate: 0.4  
Low min result mean (50.91)  
Several attempts required to pass this course (2.03)

MATH141, semester 2, 100 students, passrate: 0.56  
Low min result mean (56.27)  
Several attempts required to pass this course (1.72)

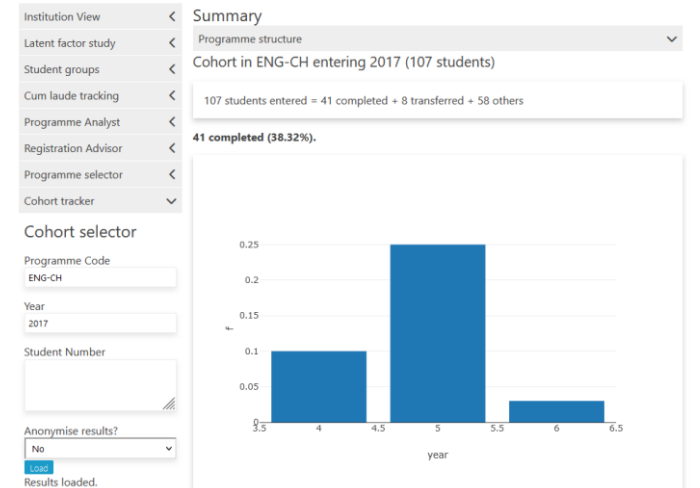
MATH142, semester 2, 100 students, passrate: 0.12  
Low passrate (0.12)  
Possible gatekeeper course (core course, with low passrate).  
Low min result mean (37.71)  
Several attempts required to pass this course (2.63)

ENCH2TD, semester 4, 76 students, passrate: 0.22  
Low passrate (0.22)  
Possible gatekeeper course (core course, with low passrate).  
Low min result mean (43.57)  
Several attempts required to pass this course (2.24)

ENCH3CP, semester 6, 68 students, passrate: 0.56  
Low min result mean (50.95)  
Possible impacted course (students start course only in semester 7.53 instead of 6)  
Several attempts required to pass this course (1.46)

ENCH3ED, semester 6, 67 students, passrate: 0.51  
Low min result mean (50.27)  
Possible impacted course (students start course only in semester 7.16 instead of 6)  
Several attempts required to pass this course (1.58)

ENCH3MT, semester 6, 67 students, passrate: 0.63  
Low min result mean (53.75)



Students who **completed** this degree go on to do the following programmes: MSEN (2)  
Students who **did not** complete this degree go on to do the following programmes: BSCSIT (2), BSM (1), BSS (1), BAH (1), BARCS (1), BCOA (1), PGD-AC (1)

# Academic Programme Advising

# Lecturer Advising

- Academic advice
- Also direct to non-academic
- Promote good class organisation
- Promote use of modern teaching methods
- Increase awareness of student risk

Course status

99 students  
5 students at risk (5.05%)  
68.65% unweighted assessment mean  
98% unweighted assessment passrate

**Assessment statistics**

**TM\_1 (99 students)**  
Passed: 97  
Mean: 67.68  
Std dev: 11.13  
Skewness: -4.65  
Kurtosis: 26.79

**TM\_2 (99 students)**  
Passed: 97  
Mean: 69.62  
Std dev: 10.46  
Skewness: -6.1  
Kurtosis: 39.6

**Student performance**  
High performing students

(zAlert: -0.189)  
> View all results

**Students at risk**

(zAlert: 6.62)  
Below 50 on TM\_1 (0 %).  
Unusually low mark (0%) for TM\_1 (mean = 67.68%)  
Below 50 on TM\_2 (0 %).  
Unusually low mark (0%) for TM\_2 (mean = 69.62%)  
> View all results

(zAlert: 6.62)  
Below 50 on TM\_1 (0 %).  
Unusually low mark (0%) for TM\_1 (mean = 67.68%)  
Below 50 on TM\_2 (0 %).  
Unusually low mark (0%) for TM\_2 (mean = 69.62%)  
> View all results

(zAlert: 1.51)  
Unusually low mark (56%) for TM\_1 (mean = 67.68%)  
> View all results

(zAlert: 1.51)  
Unusually low mark (56%) for TM\_1 (mean = 67.68%)  
> View all results

(zAlert: 1.51)  
Unusually low mark (56%) for TM\_1 (mean = 67.68%)  
> View all results

**Course meta data**

**No advice rendered to students**  
Advising students in need of support is a key aspect of managing a class. None of the students at risk have been advised on how to improve performance. None of the students who are performing well have been encouraged to maintain / improve performance. Please use the messenger or auto-messenger to advise students.  
[Open messenger](#)

**Concept scaffold not implemented**  
The course concepts and topics have not been scaffolded so that students could pinpoint where they need to develop their understanding. Creating a concept map of your course content is an interesting exercise which has many applications. Please use the concept scaffold to define and connect your course concepts.  
[Open concept scaffold](#)

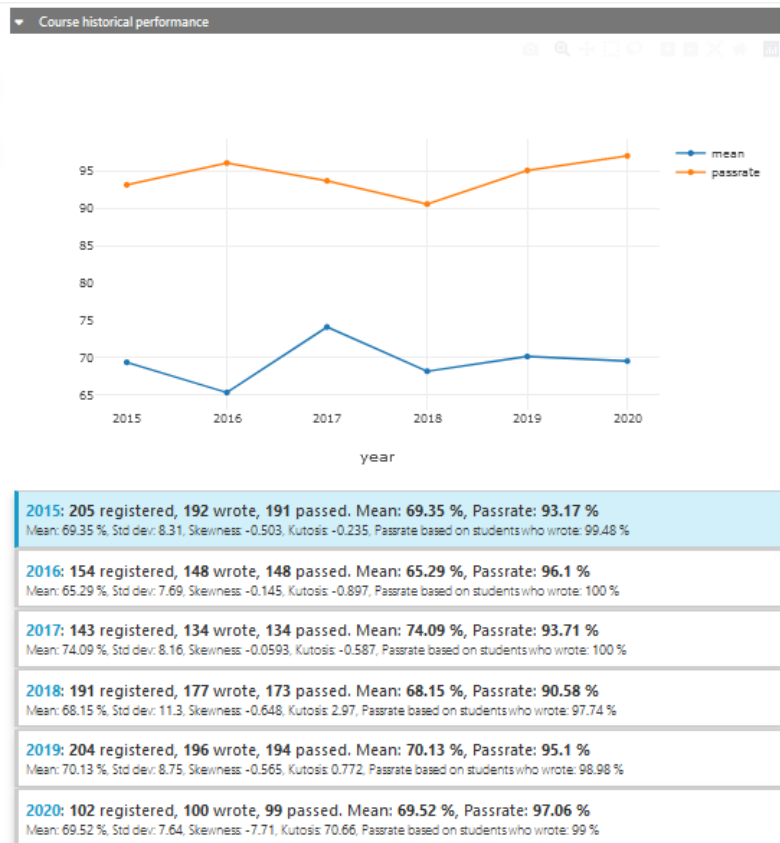
**Learning resources not attached**  
Learning resources have not been attached to this course content. Attaching learning resources is a relatively simple process which may be undertaken through the Coursework Curator.  
[Open coursework curator](#)

**Assessment schedule not defined**  
The assessments have not been scheduled; this makes it difficult for students to plan their studies. Define the assessment plan in the assessments section.  
[Open assessments editor](#)

**Assessment meta data has not been defined**  
The assessment weights are essential for accurately advising students. Kindly define the assessment weights in the assessment editor.  
[Open assessment editor](#)

# Lecturer Advising

- ❖ Awareness of performance
- ❖ Peer course performance
- ❖ Less action oriented



Peer performance

Copy CSV Excel PDF Search:

code	FNAB401	PDAB203	MGAB401	RMAB201	MKAB202	EXHS101
FNAB401	1	0.507	0.205	0.103	0.632	0
MKAB202	0.632	0	-0.291	-0.0312	1	0
PDAB203	0.507	1	0.443	0.124	0	0
MGAB401	0.205	0.443	1	0.139	-0.291	0
RMAB201	0.103	0.124	0.139	1	-0.0312	0
CCHM101	0	0	0	0	0	0

# Lecturer advising – Student risk oriented

- ❖ Find students significantly under-performing
- ❖ Ease process of reaching out to students
- ❖ Automated messaging of whole class but custom scripting – each receives different context message
- ❖ Lecturer script editing

ClassView Connect  
A project by the Modern Scholarship organisation  
DUT 2023 Implementation

Course status Course performance Learning pathways Course meta data Academic records Help & training

Course status  
MGAB401 - 2020

100 students in total 12 high-performing students 31 at risk students

TM\_1 There are 0 students where TM\_1 is at or below 50. Mean: 69.07, Std deviation: 5.38

TM\_2 There are 0 students where TM\_2 is at or below 50. Mean: 71.05, Std deviation: 2.92

Select course Assessment stats

Property statistics

TM\_1

```
{
  "N": 97,
  "max": 82,
  "min": 55,
  "mean": 69.07,
  "sd": 5.38,
  "skewness": -0.514,
  "kurtosis": 0.479
}
```

TM\_2

High performing

Filter

a20f07c4b7 522d059c... (aa06c04b9c)

View all results

5c60e163ef 550b7c87... (3b4d589f89)

View all results

e673c89770 06e2c050... (819ebb6e70)

View all results

Results  
High TM\_2 (75).

Report

```
{
  "pos": [
    "High TM_2 (75).",
  ],
  "neg": []
}
```

Data

```
{
  "studentNumber": "819ebb6e70",
  "firstNames": "e673c89770",
  "lastName": "06e2c050e1",
  "TM_1": 68,
  "TM_2": 75,
  "id": null,
  "report": {
    "pos": [
      "High TM_2 (75).",
    ],
    "neg": []
  },
  "TM_1Z": -0.199,
  "TM_2Z": 1.35,
  "reportPos": 1,
  "reportNeg": 0,
  "reportNet": 1,
  "reportNetZ": 1.55,
  "entClass": 2
}
```

View all results

5cd4020101 8552b16d... (aa521259b9)

View all results

Send a message

Send from  
bkdr3@dut.ac.za

Send to  
819ebb6e70@stu.dut.ac.za

Message subject  
Improvement in MGAB401

Message body  
Hi E673c89770,  
  
I am pleased to note the strong progress you're making! (High TM\_2 (75).)  
To maintain or further improve your position, I would like to suggest that you try out the resources suggested in your profile in Student Central.

Kind regards

Send message

Message script editor  
Automated messaging

# Generalise advising concept

Maintained a mark of least 5 for all tutorials


  
**Good performer**  
awarded to  
**Student name**  
Maintained a mark of least 70 for in all assessments


  
**Present and counted**  
awarded to  
**Student name**  
Attended at least 90% of all class events each week


  
**Active student**  
awarded to  
**Student name**

Message multi-students

**Student advice preview**

 **Good assessment mean**  
Your assessment mean is relatively good. Please keep doing what you're doing to keep it up!  
31.08.2022 08:55:43

 **Good assessment passes**  
You've passed a good number of assessments. Be sure to keep it up!  
31.08.2022 08:55:43

 **Good rate of attendance**  
Your attendance rate at the course events is good. Keep on coming!  
31.08.2022 08:55:43

- ❖ Alert and messages are an entry point
- ❖ Also generate awards
- ❖ Also trigger institution classifications, progression strategies, registration
- ❖ Trigger support interventions



# Student Advising (AutoScholar Student Central)

- ❖ Shift student interest from mere final pass to class of pass
- ❖ Original – cum laude advising
- ❖ Everyone was on track for summa cum laude at some stage
- ❖ When exit, class pass improvement still possible
- ❖ Track down to individual course assessments
- ❖ Specific and clear action
- ❖ “Improve my results”

The screenshot displays the 'Students records' section of the AutoScholar Student Central interface. On the left, a 'Student selector' list shows several students, with Terrance Barry Lopez (ID: 201809459) highlighted. On the right, the profile for Terrance Barry Lopez (ID: 201809459) is shown. A status message indicates he is currently on track to graduate with a Lower Second degree (credit wt av = 69.87%) and needs to achieve an average of 70.36% in the remaining 132 credits to reach an Upper Second degree. Below this, three course cards are displayed: NGCH421, NGCH422, and NGCH423. Each card provides a target average and a breakdown of assessment performance.

Student	ID
William Darryl Robinson	201757676
Ralph Cecil Clark	201818575
April Dora Diaz	201800054
<b>Terrance Barry Lopez</b>	<b>201809459</b>
Curtis Jacob Foster	201852625
Melinda Velma Ross	201866786
Adrienne Kathryn Turner	201870331
Derrick Fernando Lopez	201803504
Herbert Lee Sanchez	201861164
Joseph Jon Scott	201818268
Tyrone Gordon Gutierrez	201922967
Jared Hugh Jones	201994399
Esther Yolanda Brooks	201906987
Marshall Cory Castillo	201959005
Nancy Robin Scott	

**Students records**

**Student selector**

**Terrance Barry Lopez 201809459**

Currently on track to graduate with a **Lower Second** degree (credit wt av = 69.87%).  
To reach a degree class of **Upper Second**, achieve an average of **70.36%** in the remaining **132** credits.

**NGCH421**  
Need to maintain an average of **77.78%** in the remaining in the remaining assessments.

**quiz1:** quiz1 (5% of final) **71%**  
**practical:** practical (10% of final) Not available (not written?)  
**test2:** test2 (10% of final) Not available (not written?)  
**test1:** test1 (10% of final) **7%**  
**assignment:** assignment (10% of final) Not available (not written?)  
**exam:** exam (50% of final) Not available (not written?)  
**quiz2:** quiz2 (5% of final) Not available (not written?)

**NGCH422**  
Need to maintain an average of **73.95%** in the remaining in the remaining assessments.

**quiz1:** quiz1 (5% of final) **84%**  
**exam:** exam (70% of final) Not available (not written?)  
**quiz2:** quiz2 (5% of final) Not available (not written?)  
**test2:** test2 (10% of final) Not available (not written?)  
**test1:** test1 (10% of final) **33%**

**NGCH423**  
Need to maintain an average of **72.48%** in the remaining in the remaining assessments.

**exam:** exam (70% of final) Not available (not written?)  
**quiz2:** quiz2 (5% of final) Not available (not written?)  
**quiz1:** quiz1 (5% of final) **27%**

**test1:** test1 (10% of final) **44%**

# Cum Laude Project

- ❖ What's the difference between cum-laude and not-cum-laude?
- ❖ Extensive questionnaire which is still easy to answer
- ❖ Probes
  - ❖ Level of interest in chosen study area,
  - ❖ Study habits
  - ❖ Home environment
  - ❖ Institutional support
  - ❖ Social & peer factors
  - ❖ Funding & finance

Thank you for taking the time to help us understand the needs of our students by completing this questionnaire.

**Instructions**

1. Please click/tap on your level of agreement with each statement.
2. At the end of the statements, please enter any comments you'd like to make.
3. Click/tap on the next section header to open it.
4. Please save your submission in the "Save and complete my submission" section.

1. Interest in chosen field

I made the right choice of programme and specialisation/phase (Click on a choice below)	I am satisfied with choice of career in the SoE (Click on a choice below)
Strongly agree	Strongly agree
Agree	Agree
Neutral	Neutral
Disagree	Disagree
Strongly disagree	Strongly disagree

I received appropriate academic advising to make decisions in registering for my modules (Click on a choice below)	I registered for the wrong specialization/phase and or modules initially but have self-corrected after I received academic advice, enabling my decision to change and pursue my interests (Click on a choice below)
Strongly agree	Strongly agree
Agree	Agree
Neutral	Neutral
Disagree	Disagree
Strongly disagree	Strongly disagree

Comment on these answers

I regularly attend 80% and above (Click on a choice below)	In my first year I was just doing as I see people doing I did not have much information about what I was doing but as time goes on I understand that this degree is not just a thing but it is here to build myself and be able to take any decision for myself. I then started to trust myself and invest much time for my academic work. I got support from my friends and in my lectures but the bigger part was when test marks come back I will get higher marks then I will start to wish that in all of my modules can I get higher marks only by that I start to study hard than before.
Strongly agree	

# Most positively correlated

## ❖ Pearson extrema:

- ❖ 1: Perfectly correlated
- ❖ 0: Completely scattered
- ❖ -1: Perfectly inversely correlated

## ❖ Strongest factors appear to be

- ❖ Choice of study and degree of motivation
- ❖ Study habits

Pollster  
A project by the Modern Scholarship organisation  
ScholarCloud Implementation

Student correlation Help & training

Correlation

Copy CSV Excel PDF

qidx	p	n	question
q_1_8	0.444	150	I am conversant with technology enha learning and competent in using the learning platform (UKZN-Learn22)
q_2_4	0.409	118	I complete all my tasks on time to ens meet stipulated deadlines
q_1_12	0.371	152	I am self-motivated and draw my inspiration from self-regulation to per at my highest potential
q_2_15	0.364	116	I am proficient in using the Learning Management System (Learn22)
q_2_5	0.352	118	I consult with my lecturers when I need get clarity, and support to remain focu and engaged
q_1_4	0.345	152	I regularly attend lectures for all the modules I am registered for 80% and i attendance rate)
q_1_13	0.344	151	My peers see me as a highly self-moti individual
q_2_16	0.339	117	I am proficient in using online resourc access studv materials and do research



# Teaching and Learning

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- General advising, progression – fine
- Nagging questions
  - Not really enough
  - Not accomplishing changes seen 15 years ago
  - How to access to “lower-level”, day-to-day, coalface, contextual teaching and learning
  - Too much context for a general programme?
- Framework & gen methods + context teachers

# Attaching Teaching content – Publon Press

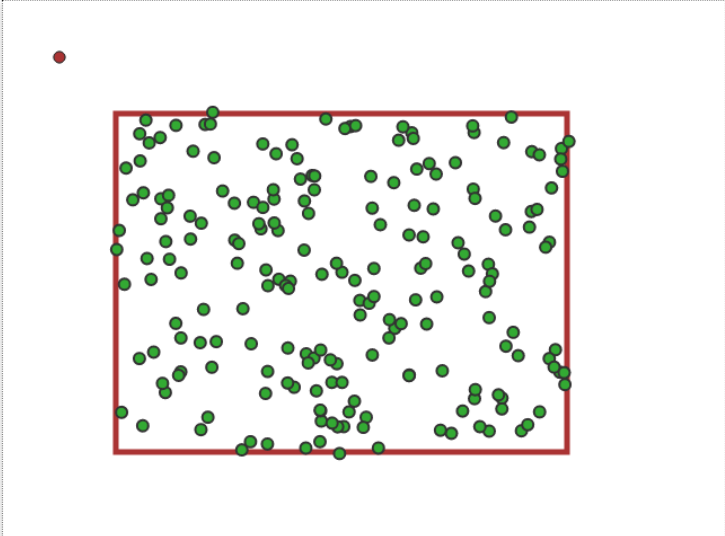
- ❖ Interactive creation of
  - ❖ Animated simulations
  - ❖ Latex documents
  - ❖ Fully rendered math equations
  - ❖ Auto-generation of assessment questions
  - ❖ Auto-grading of assessment questions
  - ❖ Self-testing and self-evaluation
  - ❖ Global repo of education content
  - ❖ Integrated ranking

Chemical Engineering Fundamentals  
July 2022, Randhir Rawatlal

1. Mass transfer

1.1 Basic concepts

1.1 Basic definitions



The diagram shows a square domain with a red border, containing many small green dots. A single red dot is located outside the square, in the upper-left area. This likely represents a simulation of mass transfer or diffusion in a confined space.

# Auto-gen, Auto-grade

- ❖ Questions including randomised values
- ❖ Auto-generated solution
- ❖ Modes include
  - ❖ Training
  - ❖ Class poll
  - ❖ Questionnaire
  - ❖ Credit-bearing assessment
- ❖ Extend range of question types
- ❖ Potential for NLP for non-MCQ

## Example

An initially empty container of volume  $5m^3$  fed with a liquid of density  $1200kg/m^3$  by a pipe of diameter  $2cm$  is filled after 60 minutes. What is the velocity of the flow?

Please click on your answer

0 m/s

0.000314 m/s

4.43 m/s

0.00139 m/s

My Grade

Your answer 4.43 m/s is worth: **1 marks**

We first calculate the area as  $A = \pi.d^2/4 = 0.000314m^2$ . We note that the flowrate is

$$\dot{V} = \frac{\Delta V}{\Delta t} = 0.00139m^3/s.$$

The velocity is then

$$u = \frac{\dot{V}}{A} = 4.43m/s.$$

# Student response

## Message received from Class Representative

firstNames	lastName	q1	q3
Thubelihle Lusizo	Msimang	50	50
Michaela	Perumal	25	25
Azrah	Adam	15	15
Mohamed Mustapha	Abdul Aziz	12	6
Elton Reason	Mnisi	10	13
Krivania	Dorasamy	10	10
Matthew Jerade	Chetty	10	0
Neha	Rajpal	8	6
Nashlin	Pillay	7	0

**From:** [Redacted]

**Sent:** Thursday, 08 September 2022 15:11

**To:** [Redacted]

**Subject:** Publon

Greetings Sir .


We humbly asking you to put some questions on publon if it's not inconvenient for you .

We would like to utilize it in preparation for the test .


Thank you

Get [Outlook for iOS](#)

0



**Active student**  
awarded to  
**Student name**  
Used Learning Management System at least 2 hours each week



**Consistent Diligence**  
awarded to  
**Student name**  
Maintained a mark of least 5 for all tutorials

firstNames	lastName	q1	q3	q4
Haneefa	Abdul Aziz	5	4	3
Manelisiwe Prudence	Maphela	5	6	5
Nkazimulo	Mthembu	5	0	0
Phila Andrew	Mlindazwe	5	2	2
Qiniso Nneko	Dlamini	5	2	2
Yurisha	Govender	5	0	0
Taihael	Sindraj	4	2	3
Arkaj	Maharaj	3	3	5
Nikeshia	Chetty	3	2	2
Randhir	Rawatlal	3	0	0

Showing 31 to 40 of 56 entries

Previous 1 2 3 **4** 5 6 Next

# Creating automated questions

- <https://modernscholarship.org/PublOnPress>

- ❖ Integration with student performance
- ❖ Automated testing, stu self-eval
- ❖ General editor for content gen
- ❖ Newer versions even easier to use

The screenshot displays the Publon Press Editor interface. At the top, there is a blue header with the logo and text 'Publon Press Editor' and 'A project by the Modern Scholarship organisation'. Navigation buttons for 'Edit', 'View', and 'About us' are visible, along with a user profile icon.

The main content area shows a document titled 'Reactor Technology Fundamentals' by 'July 2022, Randhir Rawatlal'. The document content includes a section '1. Kinetics and Thermodynamics' with a sub-section '1.1 Basic concepts' and '1.1 Basic definitions'. The text in the definitions section reads: 'Let's first introduce the basic variables and quantities. We adopt the standard basic variables in SI units: mass  $m$  [kg], time  $t$  [s], volume  $V$  [ $m^3$ ], moles  $n$  [mol]. We may also identify 'derived' units: molar mass of component- $i$ :  $MM_i$  [kg/mol], energy  $E$  [ $J = kg.m.s^{-2}$ ]'.

On the left, a sidebar shows 'My publons' with a dropdown menu containing 'Edit'. Below this, the 'Content' section shows a list of items, with the first item selected: 'Reactors notes 1'. The content area displays a JSON-like structure for the document, including CSS styles and LaTeX content.

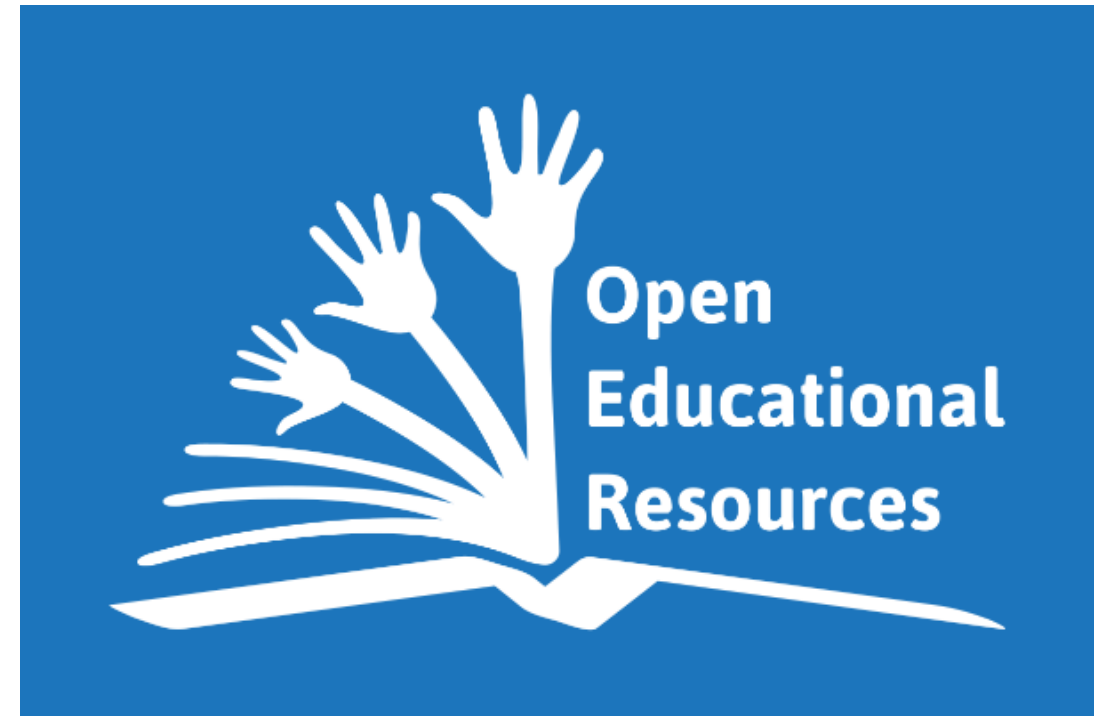
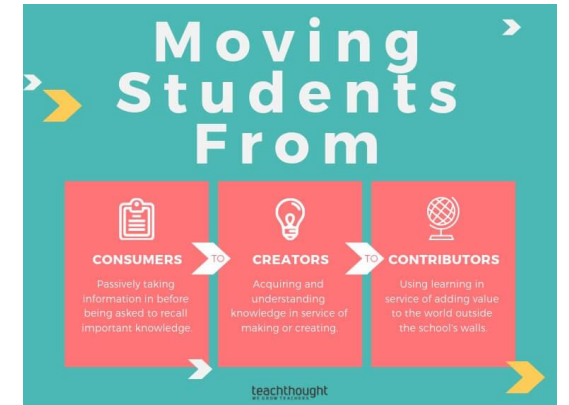
On the right, a 'Templates' panel is open, showing a list of templates: 'Document layout', 'UI components', 'Publon elements', 'Question', 'Plot', 'Graph', and 'Animated drawing'. The 'Question' template is currently selected. Below the templates panel is a 'Browse' button.



# Student as creators

---

- Original – release editor for tutor creation support, co-lecturer
- Content creation progressing
- Instructional Design
- Students as creators
- Open Education Resources
- National resource



# Creating a Concept scaffold

Define the concept scaffold

**Node editor**

Node label

Node style  
Style 1 ▾

Current nodes  
Scalars and Vectors ▾

+ 🔒 🗑️ ↻

**Edge editor**

From node  
Scalars and Vectors ▾

To node  
Scalars and Vectors ▾

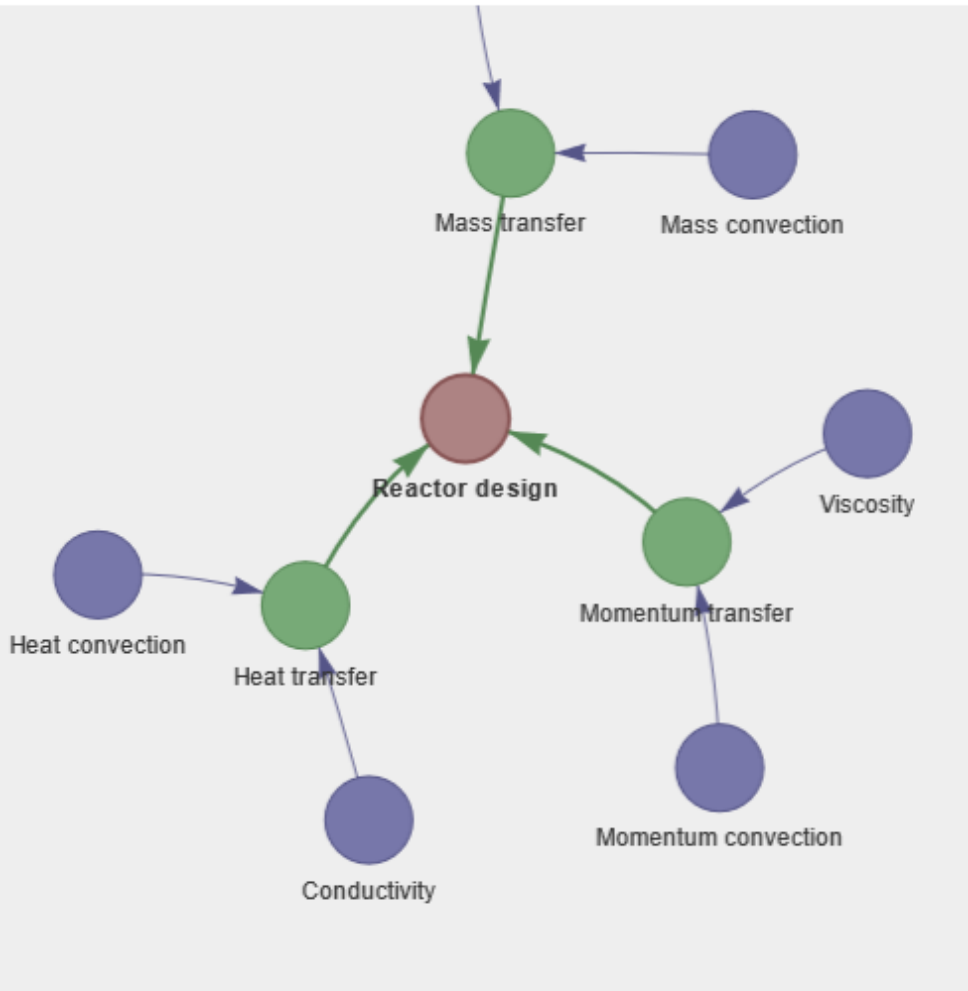
Weight

+ 🗑️ ↻

> Graph operations

```
graph TD; Mass((Mass)) --> Force((Force)); Mass --> Momentum((Momentum)); Force --> Acceleration((Acceleration)); Acceleration --> N2L((Newton's Second Law of Motion)); Acceleration --> N1L((Newton's First Law of Motion)); Momentum --> N3L((Newton's Third Law of Motion)); Momentum --> N1L; SpeedAndVelocity((Speed and Velocity)) --> N1L; SpeedAndVelocity --> DistDispl((Distance and Displacement)); DistDispl --> ScalarsAndVectors((Scalars and Vectors)); ScalarsAndVectors --> SpeedAndVelocity;
```

- Concepts as nodes, edges as concept relationships, fundamental to applied
- Application to teaching – identify revision content, understand relevance
- See cohesive curriculum content, break silos (or at least relate them)
- Graph processing algorithms – fundamental to applied “distance” (edge weights)



# Identifying knowledge gaps

- ❖ During self-evaluation, system guides students to concept(s) with lower understanding
- ❖ Directs to T&L content
- ❖ If high numbers, alert lecturer for revision
- ❖ Lecturer can use editor
- ❖ Need be done once only – same map will apply; can be centralised

## Relation editor

From

To

Add edge Remove edge

# Attaching concept resources

- To each concept / scaffold node, may attach learning content
- Automated questions
- Web-resources
- Publons
- Lecturer and student contributions

Learning Pathways

Pathway Planner Pathway Preview Lesson plan About

Define the concept scaffold

Add concept resources

Edit concept resource

Resource label

Concept  
Scalars and Vectors

Resource type  
Web URL

Resource address/URL

+ Save Delete

Concept selector

- Scalars and Vectors
- Distance and Displacement
- Speed and Velocity
- Momentum
- Acceleration

Concept resources

Create a web-doc

Create a question

Search the web

Search portal

vectors

About 5,830,000,000 results (0.26 seconds) Sort by: Relevance

Vectors  
www.mathsisfun.com > algebra > vectors  
Vectors ; A vector has magnitude (size) and direction ; vector subtract  $a-b = a + (-b)$  ; A vector is often written in bold, like  $\mathbf{a}$  or  $\mathbf{b}$  ; The vector  $\mathbf{a}$  is ...

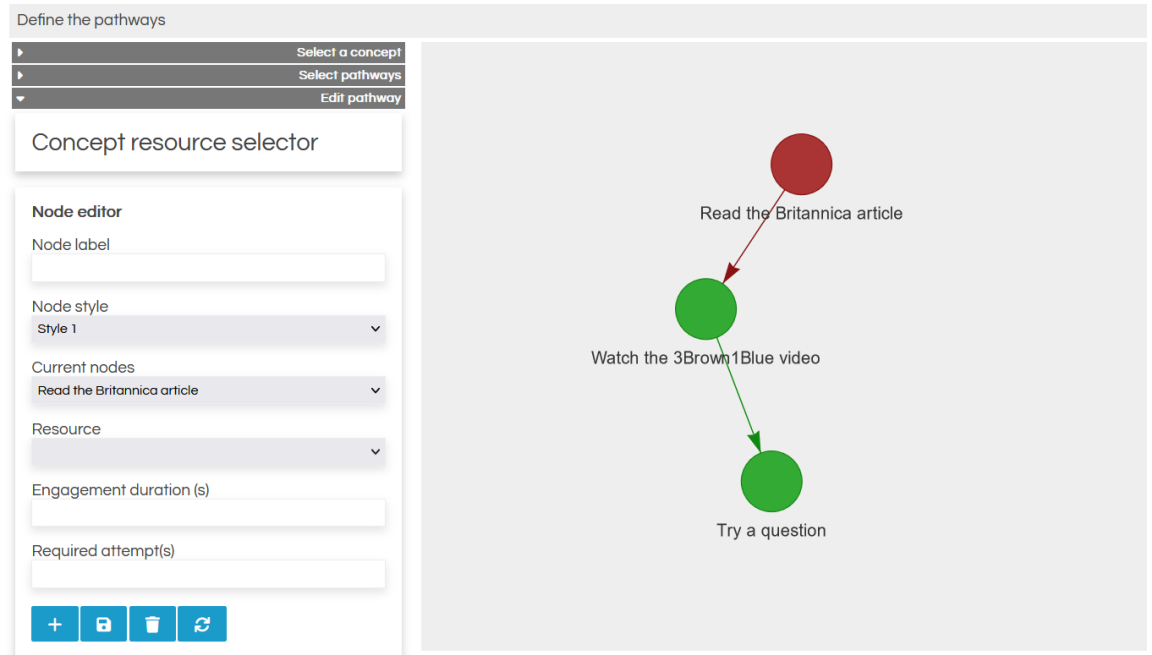
Vector images, illustrations and graphics | Freepik  
Freepik > vectors  
In the world of graphic design, vectors are shapes, or more specifically lines and curves, that form an image based on a mathematical formula. Due to their ...

An introduction to vectors - Math Insight  
mathinsight.org > vector\_introduction  
A vector is an object that has both a magnitude and a direction. Geometrically, we can picture a vector as a directed line segment, whose length is the ...

Vectors in Maths | Introduction to Vectors | Euclidean Vector Examples  
BYJUS > Maths > Math Article  
Vectors, in Maths, are objects which have both, magnitude and direction. Magnitude defines the size of the vector. It is represented by a line with an arrow

# Creating Learning pathways

- ❖ slurry of learning resources
- ❖ organize within-concept path of learning engagement of content
- ❖ multiple pathways exist
  - ❖ differences in learning style (visual, etc)
  - ❖ language
  - ❖ visual interpretation
  - ❖ pace of learning (for time-sensitive content e.g. video)
- ❖ borrow concept from concept scaffolding (and the method)
  - - multiple conceptual pathways
    - Relates to the way the material is structured
    - Usually assume one concept map
  - - multiple representational pathways
    - Relates to the way the material is presented






# Engage a learning pathway

- Student presented with a flat list of learning actions
- Can auto-test level
- Student may also indicate level of completion
- Checklist builds to gamify progression (careful – keep honesty in self-eval)
- Each concept defines multiple learning pathways

Preview student view


### Step 3/3. Complete a lesson

Please complete the lessons in the order shown below

-  Read the Britannica article  
Duration: 120
-  Watch the 3Brown1Blue video  
Duration: 120
-  Try a question  
Duration: 120

Previous Next ▶

### My study records

 Load my records

To what extent do you understand this question and are able to answer it?  
How well can you answer this question?

Which of the following describe a vector?

- Vehicle 1 is travelling at 4 km/hr and vehicle 2 at 8 km/hr
- The box is falling at 6 m/s and accelerating at 8 m/s<sup>2</sup>
- The ball mass is 6 kg
- I am 4m west and 8m north

Submit

# Perspective shift

- Return to largest surface area – Teacher-student interface. Do teachers and students “see” it? Expect large improvements 25% +
- Modern Teaching methods; students do appreciate and engage
- Instructional Design to accelerate
- Some sense of So What? ..for DA
- Data analytics to guide prioritizing content development (by lecturers) and content engagement (by students)
- UKZN – used in pockets by a few groups; building cred through ASAF. Student are responsive where in use
- DUT – excellent training programmes. Staff daily accesses 800-5000

The AutoScholar is organised as a set of core components. **Click on a card** below to launch one.



**ClassView Connect**  
..supports lecturers' connection to students, analysis of past and present performance and modernises the classroom management.



**Publon Press**  
..supports the creation of Open Education Resources, open teaching content and automated assessment.



**Programme Analyst**  
..provides corrective insights into progression-to-grad limitations due to gate-keeper courses and student progression strategies



**Student Central**  
..helps students stay on top of their studies, understand the gaps in knowledge and organise towards a successful graduation.



**Casework Counsellor**  
..assists counselling and student support maintain case records and manage student success intervention programmes.



**Research Gateway**  
..provides easy access to statistical analysis, machine learning and research document creation.



**Accreditation AutoMate**  
..generates the reporting and advising needed for accreditation compliance and accreditation review.



**Executive Insight**  
..supports executive leadership's broader monitoring of institution performance and support needs.



**Alumni Associate**  
..maintains the connection between an institution and its graduates to celebrate on-going success.

# Suggested Data Analytics + T&L operationalised

Use of data analytics to identify programmes, courses, students at risk

Programmes and courses at risk – require pathways definition (KPIs)

Students at risk – require pathway engagement (prog rules)

Toward a pathway engagement, student uses meta question self-diagnosis to identify concept-knowledge-gaps

Undertake pathway until competence and filling of knowledge gap



# Proposed collaborations, services

## Open Learning Resources organised in Learning Pathways

- Training in content creation, embedding in LP frameworks
- National learning content repository
- Instructional Design capacity at National level

## Data Analytics and Machine Learning capacity

- Coursework development with Saide/Ashton
- Provision of AutoScholar AIRTime
- Create & deploy models without code

## Modern Scholarship academic programme

- New methods of creating teaching content
- Effective use of Data Analytics & Machine Learning
- New teaching methods: flipped classroom, students as co-creators